





# BRAINS, BRAWN AND PLUCK WILL ACCOMPLISH WONDERS, — BUT — THEY DON'T COUNT FOR MUCH IN MILLING WITHOUT CASE MACHINERY.

This fact is so well established that Arguments are not necessary.

## WHERE CAN YOU FIND ITS EQUAL?

*Find a good roller miller who has run the different systems and makes of mills, and ask him which he prefers to run and which will produce the best flour. His answer will be every time*

## "A CASE MILL DOWNS THEM ALL"

Millers who think of putting in a Roller Outfit or of buying more machinery,

## PONDER WELL BEFORE BUYING,

And remember that even if you DO save a few dollars on your contract by buying inferior machinery, WE DON'T CARE WHAT GUARANTEES THEY MAKE, those few dollars saved will lose you as many hundreds before you are through with your BARGAIN, and DON'T FORGET IT. Give us your contract, and if we don't give you a mill that will fill or exceed our guarantee, you needn't pay for it, for

**WE WILL SATISFY YOU EVERY TIME.**

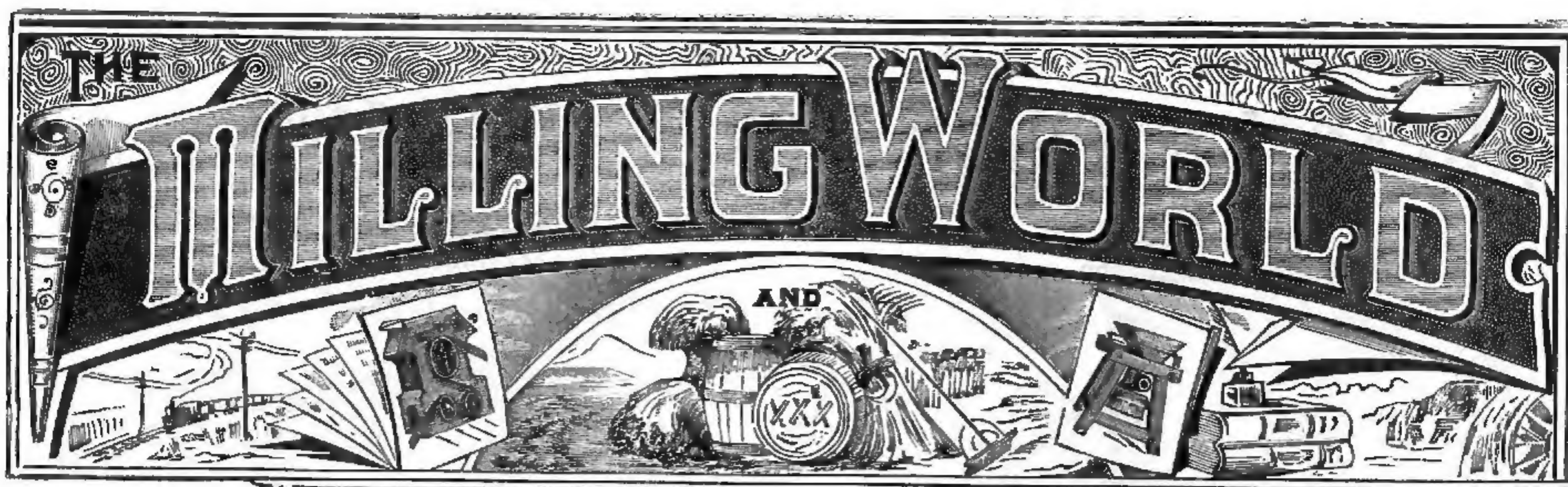
*Mill Supplies of all kinds at Low Prices. Rolls Re-Ground and Re-Corrugated with Accuracy & Dispatch.*

Write Us for Anything you need and We will look after Your Interests.

# THE CASE MFG. CO., COLUMBUS, O.

PLEASE MENTION "THE MILLING WORLD."





CHRONICLE OF THE GRAIN AND FLOUR TRADE

PUBLISHED EVERY MONDAY MORNING.

VOL. XXI. No. 1.

BUFFALO, N. Y., SEPTEMBER 2, 1889.

\$1.50 PER YEAR.

THE latest reports indicate good weather. The season of 1889 is a bounteous one in the United States. It is well. Let the campaign open and proceed.

OUR esteemed Indianapolis cotemporary pleads that the new secretary of the Millers' National Association shall be judged and criticized by the milling press solely on his merits as a secretary, implying that his former uncalled-for abuse of several milling papers should be ignored by the papers abused. This is very generous in our cotemporary, and doubtless it would be very pleasant to the new secretary to be so generously treated by the journals which he went out of his way to abuse, but we believe that a man's actions are an index to his true character, and that, sooner or later, his character will show all its flaws in his official actions. If Mr. Barry has no qualification for his new office greater than his demonstrated personal enmity to THE MILLING WORLD, the "American Miller" and the "St. Louis Miller," the fact should be made public. If he was selected merely to inherit and perpetuate, to intensify and satisfy the personal grudges, or spites, or enmities of his predecessor in office, the subjects of those spites, grudges and enmities would be unjust to themselves to condone the selection. If the new secretary is not guilty of the offense charged by our Chicago cotemporary, let him say that he is not. If he refuse to say he is not guilty, the charge of our cotemporary, with all its unpleasant implications and suggestions, stands against him.

WE are glad to note that immigration into the United States is falling off this year. In July this year the number of immigrants from Europe was only 32,845, against 40,917 for the same month last year. For the first seven months of this year the total was only 269,146, against 357,125 for the same period last year. European journals are exulting over the decrease, and we cordially exult with them. We have been having "too much of a good thing" in the way of immigration for several years past, and it will be a good thing for our national stomach not to have its assimilating capacity always stretched to the utmost. By natural increase our population should grow at the rate of about 1,500,000 a year, and that is fast enough for all practical purposes. This year we are receiving from Quebec, Canada, an element that is not at all a desirable one in this country from a social point of view, or from a practical point of view, either. It is an element that proposes to bring in and adhere obstinately to an alien language, alien educational and religious ideas and practices, and alien customs and social regulations. It is the French Canadian element. It proposes to remain more distinctively un-American than even our Indians or Chinese. It proposes to plant mediæval institutions in this free country of progress and enlightenment. We are already over-supplied with non-assimilating human materials. A decrease, even a total extinction of immigration, would be a good thing for the United States.

THE past week brought important news from Europe, that is, important if true. At Vienna a "grain congress" was held. One of the Vienna grain-merchants, who was a mem-

ber of the congress, compared notes with the others and wired the results to his nephew, Michael Strauss, of Chicago, Illinois, who gave the figures to the public on Monday, August 26. Those figures appear in the grain and flour trade department, in this number of THE MILLING WORLD. Concerning the report alluded to, Chicago "Daily Business," replying to a question concerning its reliability, says: "Mr. Strauss does not pretend that his cable gave the official estimates. It was merely a summary of the views of delegates to the conference, obtained by an uncle of Mr. Strauss, a Viennese grain-merchant, and himself a delegate, and so wired his nephew. These views were obtained by personal interviews with fellow delegates, and the result is therefore nothing more nor less than a presumably fairly accurate forecast of estimates not officially promulgated until later in the week. The same sort of forecast was cabled last year by the same party to Mr. Strauss and proved to be approximately correct. That is all we have to judge by." Accepting it as granted that the Vienna grain-dealers, whose business will be seriously disturbed by a large shortage in their own country's wheat-crop and would be still more seriously affected by large shortages in neighboring countries, could have no good business reason for sending out a report too bullish, it may be believed that Europe will need to import a far larger quantity of wheat this year than for many years past. That fact is important to American grain-growers, grain-dealers and flour-makers. Supposing the American wheat-crop, now harvested, to be 490,000,000 bushels, an advance of a cent a bushel would add \$4,900,000 to its total value. An increased European demand for American wheat will surely cause an advance. At an advance of two cents a bushel the addition to the value of our crop would be \$9,800,000. Should the advance go on until the figures of last year are reached, that is, from 86 cents, the price in New York at this writing, to 100 cents, the price last year, the addition to the present computed value of our crop would be about \$78,600,000. In other words, the crop of American wheat, now computed to be worth \$421,400,000, would be worth \$490,000,000. The "bears" pretended that the Vienna report is a "Jew fake." They claimed that no meeting had been held. Notwithstanding this claim of the "bears," prices strengthened in consequence of the report. Agents of foreign houses in New York have been buying quietly, though they deny that they have any information to confirm the reports from the Vienna Congress of grain-dealers published Monday, as even their meeting is doubted, in view of the reports early in the season that the Hebrew houses, who chiefly compose this Congress, had resolved to attend it no longer on account of the ill-usage of their countrymen by the Austrian Government; but whether the latter has carried out its alleged purpose to have the Congress held with or without the Hebrew houses, rather than admit their control of the grain trade of that country, is not known. Hence the doubt of the accuracy of the reports is doubly doubted. Later reports announce that the congress was held at Vienna, and that the official reports, since received, confirm the shortage, but reduce its magnitude somewhat. Both reports are presented in this number.

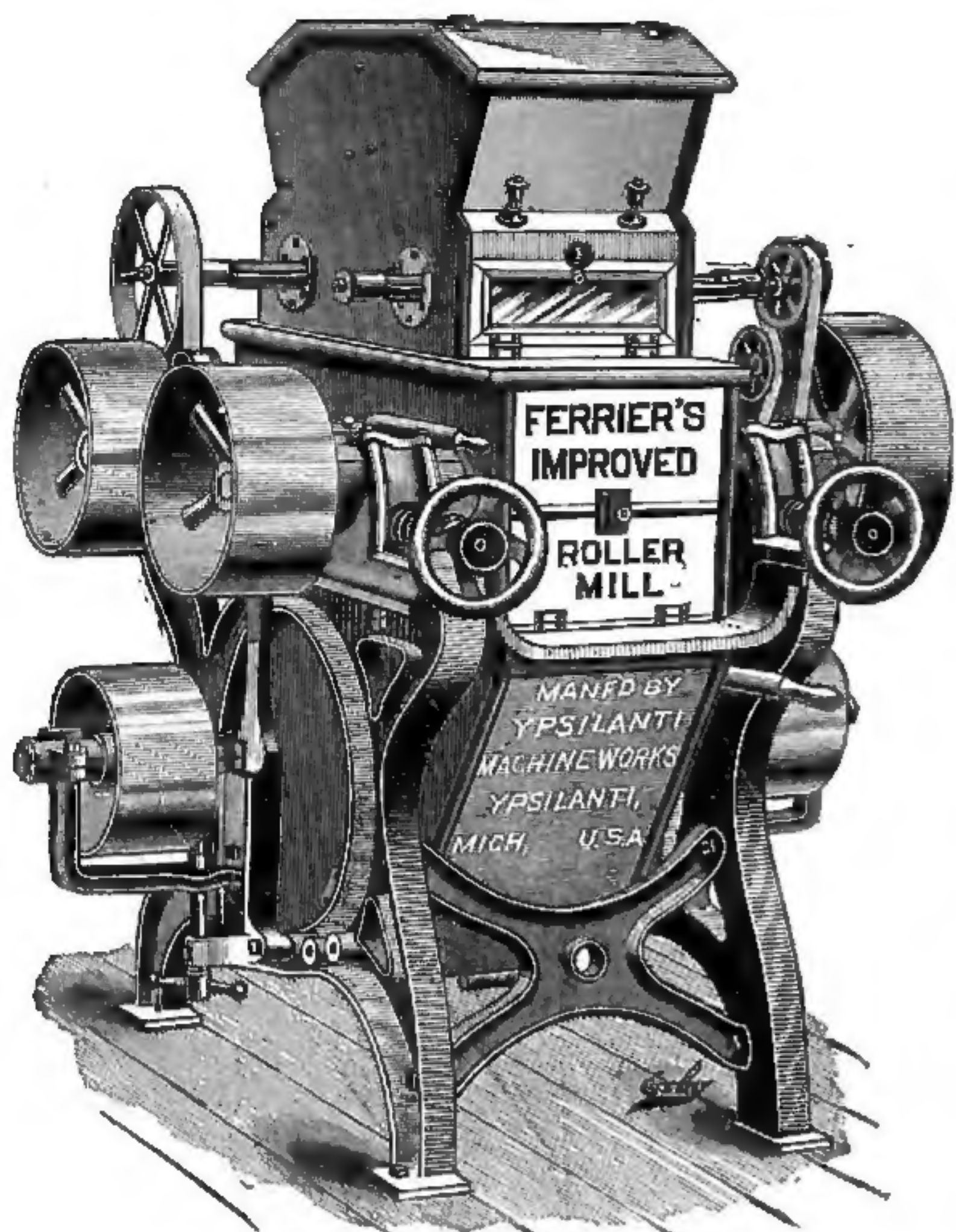


# YPSILANTI MACHINE WORKS, YPSILANTI, MICH.

## MILL BUILDERS

And Manufacturers of

## FLOUR MILL MACHINERY



Sizes of Ferrier's Improved Four-Roller Mills.

|      |      |      |
|------|------|------|
| 8x12 | 6x15 | 6x20 |
| 9x15 | 9x18 | 9x24 |

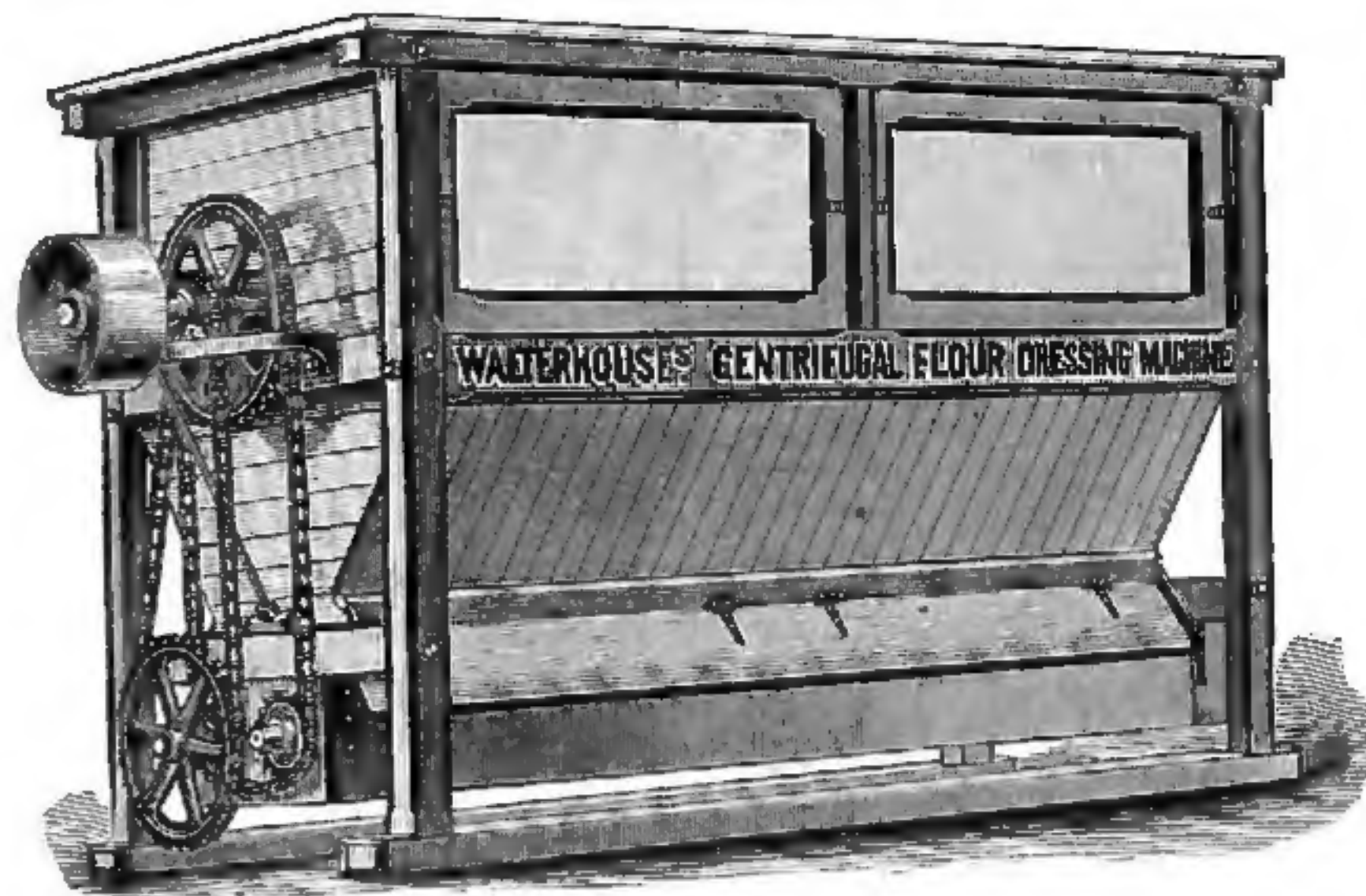
Dealers in Bolting Cloth. Walterhouse's Centrifugal; Walterhouse's Slow-Running Flour Dresser with Inside Cylinder; Plain Round Reels; Scalpers; Bolting Screens, Etc., Etc., Etc.

NASHVILLE, TENN., MAY 8, 1889.

YPSILANTI MACHINE WORKS, YPSILANTI, MICH.

Gentlemen: We have had a line of your "Roller Mills" in use for over two years, and they have given entire satisfaction in every respect. They work like a charm, and their ease of adjustment and solid structure, together with the excellent finish you give them, can but recommend your machines to the milling public.

Yours respectfully, A. R. DICKINSON & CO.



JOHN ORFF, PROPRIETOR OF  
EMPIRE FLOURING MILLS,  
FORT WAYNE, IND., APRIL 10, 1889.

YPSILANTI MACHINE WORKS, YPSILANTI, MICH.

Gentlemen: The Centrifugal Reel bought from you some time ago is doing its work complete in every respect. It does a large amount of work, and does it well. Should we make further changes in bolting, shall use more of them. Wishing you success, we remain,

Respectfully, JOHN ORFF.

OFFICE OF LEXINGTON MILL CO.,  
LEXINGTON, MICH., JAN. 22, 1889.

TO YPSILANTI MACHINE WORKS.

Gentlemen: In reply to yours of June 5th, would say that we are well pleased with our mill. It has more than met our expectations. Although it was feared that the six-inch rolls would not prove a success, we find them to be complete in every respect. We are making as fine a flour as there is made in the state, and we guarantee our patent to be equal to Minnesota Patent. The mill has given us no trouble whatever since we started it, and for plan and workmanship, your Mr. G. Walterhouse deserves great credit. If your friends doubt it would be pleased to have them come and see for themselves.

Yours respectfully, LEXINGTON MILL CO.

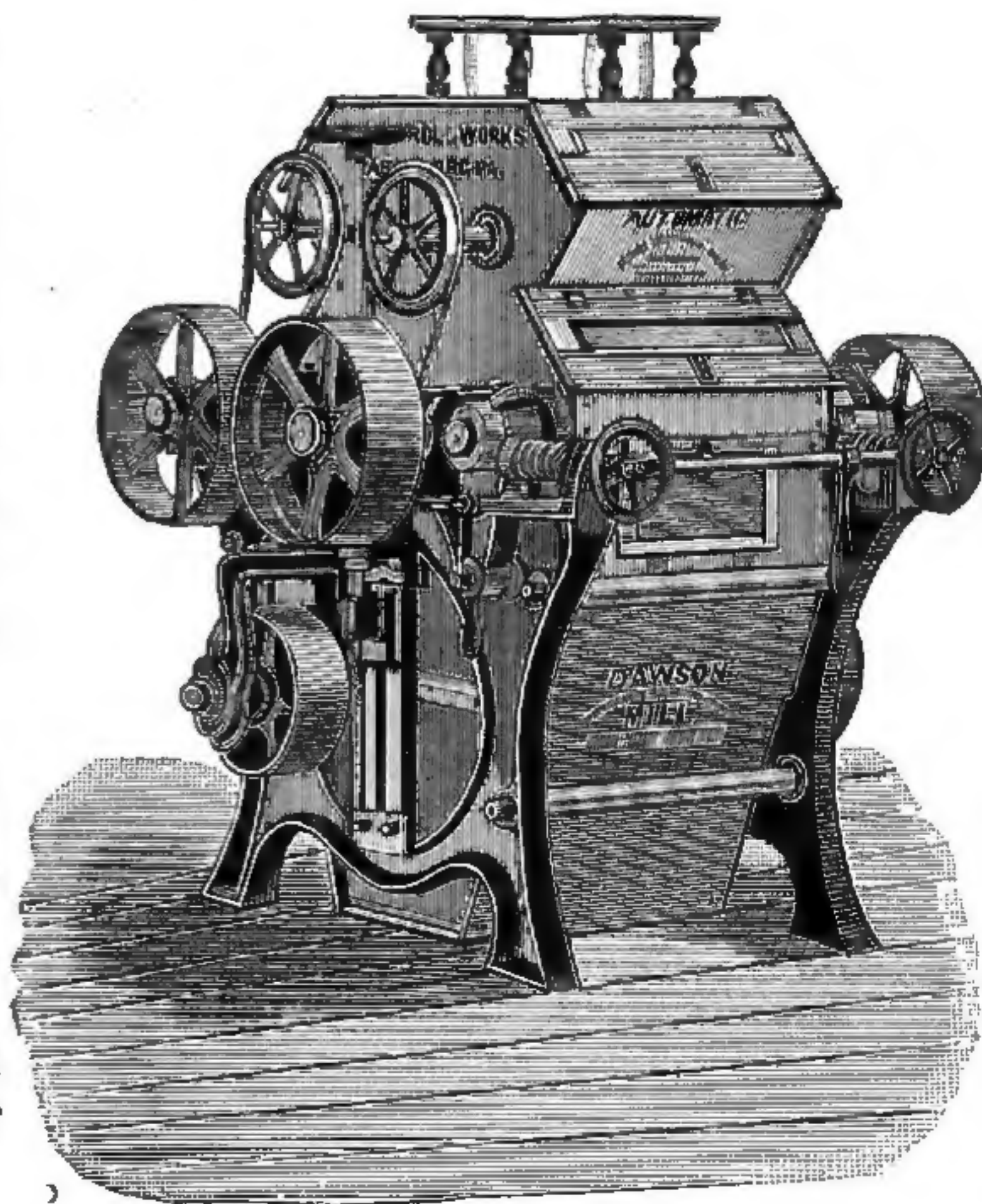
# Dawson's Roller Mill

Is acknowledged to be the very best in the market. It has our Patent Automatic Centrifugal feeder, never failing to feed the stock the full length of rolls in an even sheet. It is the Latest and Best feed out, uses less power and is simple in construction. It can be placed on any style of machine with little expense. We use for roll bearings phosphor-bronze metal which will admit rolls being run at any speed without heating and with little friction, and uses little oil. We use the Dawson Corrugation, which is admitted the best in long or short system mills as the action is granulating rather than CUTTING.

*We have a large plant to Re-grind and Re-Corrugate Rolls.*

Owing to our late increased facilities and central location we are enabled to ship goods promptly on the shortest notice.

PARTIES CONTEMPLATING REMODELING THEIR MILLS OR BUYING ANY ROLLER MACHINES ARE REQUESTED TO PUT THEMSELVES IN CORRESPONDENCE WITH US.



FOR PRICE LISTS AND CIRCULARS, ADDRESS,

# Dawson Roll Works, Harrisburg, Pa.



# MILLING WORLD

AND  
CHRONICLE OF THE GRAIN AND FLOUR TRADE

PUBLISHED EVERY MONDAY. OFFICES: Corner Pearl and Seneca Streets,  
Over Bank of Attica.  
McFAUL & NOLAN, - - - PROPRIETORS.  
THOMAS MCKAUL. JAMES NOLAN.

## SUBSCRIPTION.

In the United States and Canada, postage prepaid, \$1.50 Per Year, in advance; remit by Postal Order, Registered Letter, or New York Exchange. Currency in unregistered letter at sender's risk.  
To all Foreign Countries embraced in the General Postal Union, \$2.25 Per Year, in advance.

Subscribers can have the mailing address of their paper changed as often as they desire. Send both old and new addresses. Those who fail to receive their papers promptly will please notify at once.

## ADVERTISING.

Rates for ordinary advertising made known on application.  
Advertisements of Mills for Sale or to Rent; Partners, Help or Situation Wanted, or of a similar character One cent per word each insertion, or where four consecutive insertions are ordered at once, the charge will be Three cents per word. No advertisements taken for less than 25 cents. Cash must accompany all orders for advertisements of this class.

Orders for new advertisements should reach this office on Friday morning to insure immediate insertion. Changes for current advertisements should be sent so as to reach this office on Saturday morning.

## EDITOR'S ANNOUNCEMENTS.

Correspondence is invited from millers and millwrights on any subject pertaining to any branch of milling or the grain and flour trade.

Correspondents must give their full name and address, not necessarily for publication, but as a guarantee of good faith.

This paper has no connection with a millfurnishing house and aims to represent the trade without prejudice, fear or favor.

Address all communications

**THE MILLING WORLD,**  
BUFFALO, N. Y.

Entered at the Post Office, at Buffalo, N. Y., as mail matter of second-class.

## SITUATIONS WANTED.

Advertisements under this head, 25 cents each insertion for 25 words, and 1 cent for each additional word. Cash with order. Four consecutive insertions will be given for the price of three.

## WANTED.

A situation with parties who appreciate good work, with rolls or buhrs on patents. Have the following recommendation from Miller Bros., Forest Grove, Ore., dated Nov. 10, 1887: "To whom it may concern: This is to certify that Peter Provost has been in our employ as head miller, and has given entire satisfaction. We believe him to be a very competent man, and cheerfully recommend him to the milling public." State wages you wish to pay. Address, PETER PROVOST, Menominee, Mich. 21

## SPECIAL ADVERTISEMENTS.

Advertisements of Mills for Sale or Rent, Partners Wanted, Machines for Sale or Exchange, etc., etc., cost 1 cent per word, for one insertion, or 3 cents per word for four insertions. No order taken for less than 25 cents for one insertion, or 50 cents for four insertions. Cash must accompany the order. When replies are ordered sent care of this office, 10 cents must be added to pay postage.

## WANTED.

A miller with some capital to help stock with, to take charge and run my mill. Address LOCK BOX 265, Clearfield, Clearfield county, Pa. 1720

## FOR SALE.

Flour-mill, corn-mill and cotton-gin, in a new growing country, splendid for wheat. Good opening for a mill-man who understands the business. For particulars apply to W. J. MILLER & CO., Ballinger, Texas. 2023

## FOR SALE.

Several good second-hand and new turbines of various styles. Second-hand price list and descriptive matter and prices of our new machines sent free. Every one interested in the shortest route to successful milling on rolls or in grinding corn and feed with the least expense of power, should address us before buying.

Stf

FLENNIKEN TURBINE CO.,  
Dubuque, Iowa.

## MILL MACHINERY FOR SALE.

One No. 0 Standard Combined Separator, Smutter and Brush Machine; new, best make.  
One 20-Inch Under-Runner Portable Mill, French Buhr Stone, capacity 10 to 12 bushels per hour; new, best make.  
One 14-Inch Vertical Feed Mill; best make, new, a bargain.  
One No. 6 Dustless Separator; new, a bargain.  
One No. 1 Full Rigged Combined Dustless Separator; new, a bargain.  
Four Corn Cob Crushers, right or left hand, driven from above or below, best make; capacity 40 to 60 bushels per hour.  
Three No. 1 Corn Shellers, capacity 200 to 300 bushels per hour; new.  
One No. 2 Purifier. New. Best make. A bargain.  
For particulars address, FRANK SMITH, care of THE MILLING WORLD, Buffalo, N. Y. 5tf

## WANTED.

A good buhr miller, that thoroughly understands his business, to run a custom mill. Must be a sober, industrious man. State age, how long at the business, whether married or not, and best terms for steady employment. Give references. Address BEACH, BROWN & CO., Montrose, Pa. 2223

AFTER a year of meetings, organizations and associations of millers by the score, it is not easy to see where any great and lasting good has been achieved. It is easy, and it is pleasant, to say that "organization has wonderfully strengthened the milling interest in the United States," but is it true to say so? Is not the spring-wheat interest cutting the winter-wheat interest? Is not the winter-wheat interest cutting the spring-wheat interest? Is not the trade east doing all it can to hurt the trade west? Is the export business organized so that the men concerned are satisfied? Has a single essential thing, in any one important direction, been accomplished, in insurance, in patent litigation matters, in regulation of output, or in any thing else of general interest to the flour-making trade? The one fact remains true, that all the action on the part of the national and the more important of the minor organizations has been in the interest of flour-exporters, whether flour-makers or merely flour-dealers, and, as the number of exporters is not large and the action alluded to does not interest the large majority of millers, the organizations have not grown, either in membership or influence, as they would grow if they were organized on a proper basis and so conducted as to make their existence and success valuable to the thousands of millers who at present refuse to join them. Liberally and broadly viewed, the year of hard work in organizing has not been satisfactory in results. The statement may not please some of the boomers, but the fact remains true. What can be done remains to be done.

ERASTUS WIMAN figures out that Canada possesses in her northwestern wilderness 1,000,000 square miles of land fit to grow wheat. That means 640,000,000 acres. The Canadians, or Manitobans, claim that their land will average 30 bushels of wheat to the acre. That area and that average yield would, therefore, represent a yearly crop of 19,200,000,000 bushels, or about nine times the amount of wheat now grown and consumed in the world each year. Consul Way, at St. Petersburg, Russia, says that the wheat area of that country equals 450,000 square miles, or 288,000,000 acres, capable of producing, at an average of 20 bushels to the acre, a total crop of 5,760,000,000 bushels, or twice the present total yearly production of the world. A New York grain-dealer, who recently returned from a tour of inspection in the Argentine Republic, in South America, found in that country 1,200,000 square miles of fine wheat land. That means 768,000,000 acres and, at the alleged Argentine average of 30 bushels to the acre, a possible yearly crop of 23,040,000,000 bushels of wheat, or about 11 times the present total crop of the world. British writers locate about 500,000 square miles in India, or 320,000,000 acres, capable, under irrigation, fertilization and developmental instrumentalities, of producing 6,400,000,000 bushels, or three times the present total yearly yield of the world. British writers report in Australia about 2,000,000 square miles, or 1,280,000,000 acres of wheat lands, capable, at a 20-bushel average, of producing 25,600,000,000 bushels, or about 12 times the total yield of the world at present. These are the chief bugaboos held up to affright American wheat-growers. They aggregate 3,296,000,000 acres, capable of producing 80,000,000,000 bushels of wheat a year. Then there are scores of other bugaboo sections, millions of square miles in Africa and elsewhere, all declared to be ready to come into direct active competition with the United States, with her modest 457,000,000-bushel average yield a year. It is a noticeable fact that not one of these bugaboos is held up to affright any wheat-grower but the American. He is the only grower whose importance seems sufficient to draw all the goblins of the opposing "bear-world" upon him. We do not believe the figures presented should appall our wheat-growers, while they may comfort those crack-brained imaginationists who tremblingly contemplate the "over-population of the earth beyond its food-producing capacity."

# M-I-L-L-E-R-S

Wanting Bolting Cloths should write for discounts on same before purchasing elsewhere to

**SAMUEL CAREY,**  
71 Broadway, New York.



## POINTS IN MILLING.

AMONG the various machines devoted to flour making and handling displayed at the Paris Exposition, particular mention is made of the flour-dryer shown by Chas. Touaillon, of Paris. This machine has found wide use in France. For drying flour to ship to warm countries many processes have been invented. In many of these processes a close kiln or oven was the medium for disseminating heat, and to this closed chamber grave exception has been taken. For instance, it is urged that in a shut-up oven the vapor as it condenses against the walls must inevitably drop back into the flour and make cakes that will be so many centers of future fermentation; another objection advanced against kilns or stoves is the alleged difficulty of regulating their temperature, a serious consideration in the case of flour, the starchy and glutinous elements of which both suffer in different ways from being exposed too suddenly to the fierce heat. It is contended that these objections can not apply to the Touaillon dryer. It may be well to let the inventor describe his machine in his own words: "My dryer consists of five trays, each of which is provided with a cock by means of which steam can be conducted into a coil pipe of peculiar shape inside the tray. By the cock the temperature can be kept under perfect control, while a thermometer fixed to each tray affords a heat register. Thus the first tray can be kept at 40 degs. centigrade (103½ Fahr.), the second at 50 degs. C. (nearly 122 F.), the third at 60 degs. C. (nearly 140 F.), the fourth at 70 degs. C. (157½ F.), and the fifth at 80 degs. C. (rather more than 175½ F.); beyond this it is not advisable to go. The flour first reaches the center of the highest tray, where it is taken over the hot surface of galvanized sheet-iron by a four-armed mixer, furnished with eccentric blades consisting partly of buff leather and partly of wood covered with boars' bristles. By these the flour is conveyed to the periphery, where it drops into a spout communicating with the second tray. Here the mixer-blades are placed at an angle which is the reverse of that on the tray above, so that they push the flour towards the center, where is a spout by which it is conducted to the third tray. The same process is repeated in the case of the fourth and fifth trays. In this way the flour is made to traverse the heated surface of five trays, each of which has a diameter of two meters (about 6 feet 6 inches). On leaving the lowest tray the flour retains no more than five or six per cent. of moisture, and is then cooled in a sacking chamber. If it be desired to cool the flour as it is heated without conveying it into a special chamber, the lower tray may be converted into a refrigerator by the introduction of cold water in place of steam between the two plates. As soon as the flour is cooled it may be placed ready for export in metallic cases, barrels, or sacks of impermeable cloth, similar to that used for the tilts of carts. This apparatus has a capacity of from 300 to 400 kilos. (the kilo. is 2½ pounds) of flour per hour. It should be mentioned that in 1876 a sub-committee, appointed by the Agricultural Society of France, opened and examined a sample of flour dried by the Touaillon process and preserved in a glass since the year 1860; the flour was pronounced perfectly good, and it is further recorded that excellent bread and small goods were prepared from this same flour."

MR. E. LAMBERT, of Bar-Sur-Aube, France, exhibits a small roller mill, consisting first of a cleaning system composed of an aspirator fitted with an arrangement for extracting earth and stones and a trieur; second, of a smooth roller-mill for splitting the wheat and ridding the crease of dirt, accompanied by a brush-machine and a sieve-bolter; third, of a four-roller mill on the Ganz system for the second and third breaks, which is accompanied by a sieve-bolter, a wire-machine and worm, and a double elevator of 4.50 meters; fourth, of a middlings-purifier on M. Lambert's system, with an ordinary elevator 4.50 meters in height. It is said that the cost of the whole plant, exclusive of shafting and belting, would be 6,000 francs, or about \$1,300.

MR. G. DAVERIO, milling engineer, of Zurich, Switzerland, has on his stand, which is situated in the Swiss section of

the great Machinery Hall, two of his roller-mills, a new dressing centrifugal and a combined wheat-cleaning machine. The combined wheat-cleaning machine Daverio highly recommends to the notice of small millers who may not dispose of much power and are frequently restricted as to space. It is claimed that this system, which consists of a zig-zag with double aspirator, of a trieur and of a horizontal smutter with triple aspiration, will render efficient work at a minimum expenditure of force. Mr. Daverio has installed outside of the exhibition, in the Rue Parrault, a model small mill, which began to work on the 15th of June and will be at work until the 31st of October. This mill is furnished with only five machines and is said to be capable, with a motive force of 5 to 6-horse power, of grinding from 3,300 pound to 4,400 pounds per day.

At a recent milling examination in London, England, one of the questions was: "Would you grade wheat for first-break roll? If so, why? How would you do it? How groove the rolls, and how treat the roll products?" To this question one correspondent of the London "Miller" replies as follows: "This depends upon circumstances. If I knew that my mill would operate upon about one size of wheat, such as all spring American or all Russian sorts, as is the case in certain places, then the need for grading is not great. If, however, a mixture of several kinds and sizes had to be reduced, I should use a grader, because of the better work to be done when rollers have wheats of about equal diameters to treat. For choice should use a sieve having rotary motion; no other grader can surpass this appliance at the work in question. The rolls would be cut with the sharp form of groove, eight grooves to one inch for the largest wheat and ten for the smaller. The fast roller to have its cutting edge facing the way of rotation, the slow roller cutting edge to face backwards. The chop from rollers I would send to a sieve-scalper having double sieves, the upper sieve covered with zinc equal to about No. 20 wire, the over-tails to second-break rollers. The out-siftings through the zinc pass on to second sieve covered with zinc or silk, say about No. 8 Swiss. The over-tails will be clean semolina ready to purify, the break-flour sifts out and may be graded according to value. Air-drafts should operate on both wheat and semolina."

ANOTHER correspondent replies to the same question as follows: "I would not grade the wheat for first-break; if I had to, I should do it on a reel covered with circumferentially-long-hole perforated metal, as this grader grades more by thickness, whereas a rotary grader grades by length. I would groove the roll for first-break, two per inch for large wheat and four per inch for small, running each roll against a stationary roll grooved similarly for soft wheat, against a smooth roll for hard wheat, revolving rolls back edge first against sharp edge of the stationary in the former case. I should afterwards pass the stock to a rotary sieve with exhaust attached."

## A NEW METHOD OF STORING GRAIN.

Lyman Smith, a New York inventor, proposes to revolutionize the present system for the storage of grain and food products. If his plan is found to be feasible, and it is claimed so to be, the elevator now in general use will be permanently done away with, and each farmer and producer will be supplied with a substitute, in which he will be able to store his grain for years at small cost and without risk. According to a Chicago paper, instead of elevators, Mr. Smith will manufacture steel tanks. Briefly described, a series of these tanks with any required capacity will be constructed on suitable foundations. Their cost will average from 4 to 5 cents for each bushel of their capacity, against from 40 to 60 cents now expended on wooden elevators. These steel tanks will be filled with grain by a simple and yet wonderful process. When one of the tanks is filled a percentage of the air is exhausted and a quantity of carbonic acid gas admitted. The valves are then closed and the grain is in a condition to keep uninjured for years. There is no decay where there is no air, and this principle is the



key-stone of Mr. Smith's system for storing grain. Having exhausted the oxygen, there is no chance for fermentation, and consequently no decay. At the same time all animal life perishes, and the grain is secure against the ravages of weevil and other parasites which have destroyed millions of dollars' worth of grain. With a tank costing \$500, a grain-grower has a storage capacity of 10,000 bushels and can hold his crop against low prices for any desirable period. Fire can not burn it and lightning is powerless to destroy it. Nothing but an earthquake or a cyclone can obliterate the hard-earned product of the farmer's toil. The grain thus stored becomes the best kind of security, and any bank stands ready to advance money for it at a low rate of interest. The process by which the grain is handled is equally simple and effective. It consists of an air-tight receiver, leading from which is a large pipe devised so as to be held over the grain in the receiver it is desired to unload. By means of a suction-fan the air is exhausted in the receiver, and the air rushing to fill the vacuum is sufficient, it is claimed, to draw the grain into the pipe through which it passes into the tank. Food can be preserved, it is said, by this same process, and if the system is adopted, the consumer will have some rights, and the army of men who make fictitious values for breadstuffs will be bound to respect them. Work will soon be commenced on machine shops in Chicago for the manufacture of these tanks, and thereby a new industry will be established in that city.

#### MILLING PATENTS.

Among the patents granted August 20, 1889, are the following:

Thomas E. Ferguson and Addison H. Blanchard, Toledo, O., No. 409,180, a device for separating weevil and weevil-dust from grain.

Nicholas J. Vinyard, Vinton, Va., No. 409,256, a grain and seed separator.

Geo. H. Immendorf, Philadelphia, Pa., No. 409,287, a grain-drier.

Ellis A. Hoover, West Milton, O., No. 409,326, an automatic grain-weigher.

John A. McAnulty, Minneapolis, Minn., No. 409,329, a feed-regulator.

Chas. N. McFarland, Minneapolis, Minn., No. 409,331, an automatic feeder.

Noah W. Holt, Jackson, Mich., No. 409,465, a dust-collector.

Orville M. Morse, Jackson, Mich., No. 409,482, a dust-collector.

Robert Olp, Manitowoc, Wis., No. 409,491, a flour-sifter.

John B. Cornwall, Moline, Ill., No. 409,632, a rotary bolt.

#### THE FORMATION OF YEAST.

According to scientific authority, the method of growth of the yeast-cell and the substances from which it obtains its food are questions as interesting as they are complex; but we are forced to acknowledge that the information which up to the present time we possess is of a meager description, and there is room for much difference of opinion as to the exact manner in which yeast reproduces itself, and the precise influence of various foods, carbonaceous or nitrogenous, thereon. Some of the first considerations which we are required to face seem to be whether fermentation takes place inside or outside the yeast-cell; if outside, within what limits of distance? If inside, how does the yeast obtain its nourishment, seeing that the wall of the cell is continuous?

The theory of fermentation outside the cell-wall was promulgated by Nageli some years ago and at the time found a good many adherents. His theory turns on the assumption that fermentation takes place, not inside, but outside the cell-wall of the yeast, and is the result of vibration from the living yeast, which decomposes carbonaceous matter in its vicinity into simpler forms, into alcohol and carbonic acid. In support of this theory several facts were quoted, such, for instance, as the production of acetic ether, which

it was assumed took place only between alcohol and acetic acid in the nascent state; and since alcohol and acetic acid were produced by distinct ferments and the combination could only occur at the moment of formation, this was proof that such formation must be outside the cells of the respective organisms. We have found more recently that this view is untenable, that acetic ether may be produced from alcohol and acetic acid in other than nascent condition, and that therefore the necessity for the formation of these substances outside the cell-wall is not proved. In fact, the more our knowledge on the subject ripens, the clearer it becomes that fermentation proceeds within the cell-wall of the yeast, and that the substances nourishing its fermentation must consequently pass through the membrane enclosing the plasma. This is indeed clearly in accordance with the usual known procedure of digestion, and we think it may be taken as a fact, demonstrated with all reasonable certainty, that the substance fermented and the food for yeast must pass through the cell-wall.

Viewing for a moment the carbonaceous foods of yeast, we find that their fermentability is in exactly the ratio of their diffusibility, that is, the more diffusible the substance the more readily can it penetrate or dialyse through the cell-wall, and the more rapid will be its fermentation. This diffusibility is really the measure of the size of the molecule of the substance; the larger the molecule the less diffusible the substance. Thus starch, possessing a large molecule, has little or no penetrative power and is therefore not directly fermentable. Glucose, on the other hand, is one of the most readily fermentable of all the carbo-hydrates, and it has probably the smallest molecule. In relation to nitrogenous food the same general principle holds. Yeast can only digest such forms of nitrogenous matter as possess a small molecule. Ordinary albumen, for instance, will not penetrate the yeast cell-wall at all, and, if it is assimilated, it is only after being broken down to simpler forms under the influence of some species of peptonic ferment. The so-called "assimilation of crude nitrogenous matters" is only effected, if effected at all, after the simplification of the constitution of these matters, possibly under the influence of an inverse ferment secreted by the yeast itself.

It may be that vigorous yeasts contain or are able to secrete considerable quantities of this soluble digestive ferment; but it is pretty clear that yeast can not, prior to digestion, assimilate ordinary albumen. The outer membrane of the yeast-cell is generally stated to consist of cellulose, but this has not yet been proved. It has been shown, on the contrary, that the membrane of yeast yields, when boiled with water, a mucilage which, although belonging to the same general class, has not identically the same composition as cellulose. This outer membrane is undoubtedly formed from raw sugar, in some manner with which we are yet unacquainted, the study of which is beset with many difficulties. It is only by a clear appreciation of the real requirements of the yeast-plant that it is possible to supply those requirements in a satisfactory manner, and the study of the morphology of yeast, apparently to a careless observer so purely theoretical and unpractical, is actually one which bears closely upon the most important operations of the brewer and the baker.

#### COTEMPORARY COMMENT.

Much has been said of the evils of grain gambling and its tendency to raise the price of wheat above its real, or flouring value, but not any too much. The suppression of the evil has been attempted both by the reaction of public opinion and through legal restriction, and failed. The evil will be suppressed when the cause is destroyed, and probably not before. Whenever railroads place flour tonnage on an equality with wheat, it will be impossible for the gamblers to realize a margin, and the price of flour will determine the price of wheat, as it should.—*Indianapolis "Millstone."*

The discussion among New York grain exporters has taken a funny turn. Their moans of distress over the success of the Russian and Indian grain mixers in underselling them have been supplemented by the inquiry: "What are



the dealers here going to do with the vast American surplus this year if the foreign market is closed to them!" Our New York friends need give themselves no concern about the vast American surplus. The foreign markets may be closed to New York dealers, but the foreigners appear to be taking more wheat than usual, judging from the customs returns of exports clearances. They are buying, however, direct from western and interior merchants, by whom they are accorded fair treatment and given the goods they pay for. New York's distress is the result of purely local irritation. That city is acquiring a little business instructions in the school of experience.—*Chicago "Daily Business."*

Rose-colored reports in regard to the new quality of the new wheat crop of Minnesota and Dakota are said to have been sent out by the elevator and milling interest of the Northwest for the purpose of depressing prices.—*New York "Produce Exchange Reporter."*

#### THE PROBLEM OF OVER-POPULATION.

Over-population appears to threaten the civilized countries. The United States is particularly concerned in that threat. S. L. Loomis predicted the result of the census of 1880 within 18,000 of the actual figures. He estimates that the population of the country in 1890 will reach 67,250,000, an increase during the last decade of more than 30 per cent. To allow a reasonable margin for possible error, we may place the total at 67,000,000 and the decennial increase at 30 per cent. Should this ratio of increase continue, our population at the end of each decade during the next 100 years will be represented by the following figures, the progressive immensity of which will surprise most people and perhaps cause them to wonder:

|           |             |           |             |
|-----------|-------------|-----------|-------------|
| 1900..... | 87,100,000  | 1950..... | 320,393,290 |
| 1910..... | 118,230,000 | 1960..... | 416,513,277 |
| 1920..... | 147,199,000 | 1970..... | 541,467,250 |
| 1930..... | 191,858,700 | 1980..... | 703,907,425 |
| 1940..... | 248,765,300 | 1990..... | 915,079,642 |

People of a speculative turn of mind may well ask themselves what is to be done with so enormous a population, how are they to be supported, and many other questions that, though purely speculative now, may assume a vital importance before the close of the next century. The total area of the United States, including Alaska, is 3,580,242 square miles, or 2,291,354,880 acres. This area necessarily includes the lakes, rivers and uninhabitable mountains and deserts, yet we find that there will be an average of more than 2½ persons to each acre of our total area when the enumerators enter upon their duties 100 years hence. The exact figures are 2.504. According to Mr. Loomis the ratio of increase of population by births over deaths, although much less than it was a century since, is at present 2.01 per cent. per annum, or 20.1 each ten years. Accepting for convenience the ratio of decennial increase as 20 per cent. and casting aside all accretion from immigration, we find that in the year 1990 our total population will be more than 610,000,000.

#### HURRIED REPAIRING UNPROFITABLE.

Lack of judgment undoubtedly causes more trouble in a flour-mill than any thing else. It is liable at any and all times to make trouble in large doses for the workman, the foreman and the mill-wright alike. This characteristic is particularly noticeable on sudden break-down work. There is no time allowed for the foreman to think what is best for him to do under the circumstances; no time, unless he steals it, for the mill-wright to do the job right; and what is more to the point, the owner asks the mill-wright how soon the job will be finished, and he will almost annihilate everybody if he is answered truthfully. He tells how badly he wants flour and probably induces the mill-wright to cut it as short as possible; in other words, he gets him to promise something which he and every one else knows can not be done. Perhaps the mill-wright did so to keep the miller easy and repents the minute he has done telling the lie, for that is what it is, and the mill-wright knows it. He repents it because the miller stays until the job is done, follows him

all over the mill, hangs over the job, makes the workmen fidgety by asking questions and making suggestions, besides having made the foreman chase up the workmen, thereby causing a lack of the usual skill and confidence. He finally gets the job done and thanks his stars that he stayed at the mill, for he is sure that if he had not staid the job would have taken twice as long.

The result of such personal overseeing is, in nine cases out of ten, that the job has taken at least twenty-five per cent. more time, because the majority of machinists get nervous while a stranger is standing watching over them and oftentimes lose their head, and the consequence is that not only time but quality and accuracy of workmanship are lost. Hurried jobs are not through with when they leave the mill-wright's hands. They always need something done to them to make them fit their place or do their work on arrival at their destination, and this is the time when the machinist comes in for criticisms of the severest kind. By hurrying a job is not meant doing it as quickly and cheaply as possible. There is a vast difference between the two terms. There are many mill-wrights who have the reputation of doing first-class work, who are inclined to be so accommodating to their customers, regular and transient, that they will occasionally do that which under ordinary circumstances they would refuse to do. To mill-wrights we would say, if you are not allowed to perform work so that it will be right and to your credit because of the dire and instant need of it back in its place, enter your protest before you begin and then the responsibility lies on other shoulders. When you can persuade a miller by intelligent reasoning to consent to the proper kind and method of repairing, it is good missionary work and will do both you and him good.

#### SIMEON SYKES.

Simeon Sykes, silver seller, strayed slowly southward, steadily seeking satisfactory sales, soberly sauntered, swinging satchel, systematically showing solid silver spoons, sugar shovels, small sized salvers, superior spectacles, scissors, sewing shields. Sombre skies sent soft showers, soaking Simeon's satchel, shoes, stockings, shirt, skin. Suddenly something seemed softly saying: "Sweet Sally Slater Simeon soon shall see." So Simeon straightway strode stupendous strides, seeking Sally's sunny shelter. Simeon soon saw sundry stately sycamores standing sentinel, shading said spinster's spacious shelter; spied Sally, sitting solus, sewing silk stockinet, slyly snuffing sweet-scented Scotch snuff. Sudden surprise seized Sally's soul, seeing Simeon's swift strides; Sally's sanctity soon skedaddled shamefully. She, somewhat sensitive, suspiciously suddenly spilled some snuff, soiled stockinet, stammered, stuttered, said "s-s-seat s-sir." Simeon shivered, shook, said, "Smart shower." Sally said, "Slightly so." Simeon's shins seemed sore; so Sally sought some soothing salve (Sawyer's), supplied some soft-soled slippers. Square-shouldered, slab-sided, spindle-shanked Simeon seemed satisfied. Sally said, "Sold some silver since Sunday, Simeon?" Simeon scolded savagely. Sally suggested supper. "Sartin, Sally!" said Simeon, "something sufficiently strengthening. Some strong stimulant." So Sally sent some sausage, sirloin steak, savory stew, some soothing sangaree. Simeon's stomach seemed satisfied; so Simeon smoked several "Spanish segars," sat stupefied, soon slept, snored sonorously. Sally, sitting, solemnly stitching stockinet, suddenly sneezed! Simeon started—seemed scared—suspiciously surveyed surrounding space, shutters, shades; seemed secure. Sally stopped sewing, said she saw someone slyly sneaking, stealing Simeon's silver. Simeon, slightly susceptible, seemed suddenly smitten, sought Sally's side, sacrilegiously surrounded sanctimonious Sally Slater's smooth symmetry. She, somewhat suspicious, said, "Soft-sickish!" Simeon stared significantly, said, "Sweetest, surely such solitary souls should sympathize." Sally stopped Simeon. Simeon seemed snubbed. She seemed sorry, showed some softening symptoms, supinely sought Simeon's sturdy shoulder, sh! sh! sh! Sim smacked Sally! So straightway surrendering she smacked Sim. Simeon said, "Set some suitable season." Sally said, "September." Sim-



eon, shrugging Sim's shoulders, said: "Sooner! Surely Scripture sanctions such strong sympathy; say Sunday." So Sally succumbed. . . . . Seven supernal seasons softly, silently slipped somewhere. Seven small scions sprung, successively shedding sunshine, singing, shouting, seldom sick, squalling sometimes, still sweetening Sally's solitude. So, succeeding summers serenely spent, Simeon's seven stalwart sons seized soldiers' swords—successively subdued southern secessionists—subsequently settled south. Simeon still sells silver, supplying substantial subsistence.

### WORM CAPACITIES IN ENGLISH MILLS.

Following is a series of examples, taken from actual practice by an English milling engineer, showing the capacities of different worms conveying various kinds of stock in English mills, recently published in the London "Miller:"

1. An 8-inch worm with 7-inch pitch conveyed the whole output of a complete mill doing 23 sacks of flour per hour, the worm being of the ordinary paddle type.

2. A paddle worm, 4½ inches in diameter, 6-inch pitch, running at 145 revolutions per minute, and conveying 166 bushels of coarse sharps per hour.

3. Same worm as above, running at 300 revolutions per minute, delivering 240 bushels of coarse sharps per hour.

4. An 8-inch continuous worm of cast iron, 3-inch pitch, running at 68 revolutions, and conveying 20 sacks (each of 280 pounds) of washed wheat per hour.

5. A 10-inch continuous wrought iron worm, 5-inch pitch, running at 92 revolutions, conveyed 80 sacks per hour, each sack being 280 pounds.

6. A 10-inch paddle worm, 5-inch pitch, running at 66 revolutions, delivered the whole of the flour from one mill varying from 20 to 22 sacks per hour.

7. A 6-inch paddle worm 6-inch pitch carried the whole of the chop outsiftings of the 2nd, 3rd, 4th and 5th break scalpings of a plant producing 10 sacks per hour. It ran at 75 revolutions per minute.

8. An anti-friction worm, 4-inch diameter and 4-inch pitch, running at 140 revolutions per minute and discharging 66½ bushels per hour.

9. A continuous worm, 12-inch diameter and 4-inch pitch, running at 60 revolutions per minute and delivering grain at the rate of 6½ tons per hour.

10. A worm, 7-inch diameter and 5-inch pitch, running at 100 revolutions per minute and delivering 8 sacks of flour per hour.

11. An anti-friction worm, 4-inch diameter and 3-inch pitch, making 300 revolutions per minute and delivering at the rate of 118 bushels per hour.

12. A continuous worm, 12-inch diameter and 12-inch pitch, running at 70 revolutions per minute and delivering 34 tons of grain per hour.

In an ordinary automatic roller plant, and for ordinary purposes, such as conveying the material from one roller-mill to the following machine in the process, a 6-inch worm, whether paddle or continuous, of a pitch from 5 inches to 6 inches is sufficient. This is often large enough to convey the wheat, chop and all the flour to and from the re-dressers in a plant producing 7 sacks of finished flour per hour. For larger plants, such as those doing from 8 to 14 sacks in the same time, the 6-inch paddle worms, in the case of all ordinary connections, will suffice, while 7-inch worms should be used for wheat, chop and flour. In mills with an output varying from 15 to 20 sacks of flour per hour, it will be necessary to use 8-inch worms for the heavier part of the work; 9-inch worms will be found of sufficient capacity for plants producing from 20 to 25 sacks per hour; and 10-inch worms for those doing from 26 to 30 sacks.

As previously stated, 6-inch worms, for even the largest mills, will be sufficient to convey the products from one machine to another; but when there is material to be collected from a series of machines, a larger worm is required between the wheat, chop and flour worms, and the 6-inch worm for ordinary connections. Such products as outsiftings of the chop-scalpers, overtails of the same, or for worms which feed the different grading-reels, or worms which collect

overtails and outsiftings to a series of purifiers to go either to the reduction or patent roll, require that the worms should be 7 inches in diameter in the case of 15 to 20 sack plants, and 8 inches for 20 to 30 sack plants. Of course the speed of worms must be arranged in accordance with the material they are conveying. To illustrate what has been said above and to make the remarks more clear, is given the table showing the required diameters of worms at different stages in the process of automatic milling. The first column of this table gives the worms of the largest size, such as are required for carrying the wheat for a plant, collecting chop and so on. The second column, headed intermediate products, is for such worms as collect middlings from purifiers and feed grading-reels, and the last column represents worms for ordinary connections from one machine to that following next in the process:

GIVING DIAMETERS OF WORMS FOR CONVEYING DIFFERENT MATERIALS.

| Capacity of Mill in sacks of 280 lbs. | Size of Worms for chop, breaks flour, etc. | Size of Worms for intermediate products. | Size of Worms for all other connections. |
|---------------------------------------|--|--|--|
|                                       | in.  | in.                                      | in.                                      |
| 1 to 3                                | 4  | 4  | 4  |
| 4 to 7                                | 6  | 6  | 6  |
| 8 to 14                               | 7  | 6  | 6  |
| 15 to 20                              | 8  | 7  | 6  |
| 21 to 25                              | 9  | 8  | 6  |
| 26 to 30                              | 10   | 8  |  |

READ carefully the changed advertisement of the J. B. Allfree Company, of Indianapolis, Ind., which appears in this issue. The excellent machines of this house are finding ever larger and larger sales, and their outfits are everywhere giving the highest satisfaction. Address them for their latest catalogue and price-list.

FROM this date on the wheat-crop manipulation by the gamblers must depend upon "influences" that are chiefly supposititious. The crop is gathered. The weather can hurt it no more. The bears will go on denying that there are shortages anywhere. The bulls will insist on proving shortages everywhere. It will be a battle of lies principally, and the legitimate trade, the men dealing in actual wheat, should refuse to allow the battle to affect business or prices.

SAYS the London "Millers' Gazette:" The British Agricultural department, such as it is at present, seems to confine itself to issuing single-leaf reports concerning the American crops. The latest, just received, comprises the American Agricultural Bureau's report of July 1, which has been in the hands of the trade for nearly a month. Surely our "Agricultural Department," as it styles itself, might do something better than this.

A report from Union, Ia., says: Threshing from the shock is over and the stacked grain is now being threshed. The yield of wheat is much better than was expected. The smooth varieties have averaged 20 bushels or more. Bearded wheat has not done quite so well, as the rust did considerable damage to it; the average will be about 15 bushels.

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## GENERAL NOTES.

FROM an article in the Vienna *Gambrinus* giving a tabulated statement of European breweries and their output for the year 1887, it appears that the whole number of breweries in Europe was 50,801, and the production of beer and ale amounted to about 4,580,000,000 gallons. The takes collected from this sea of beer amounted to about \$130,000,000. The malt used weighed 740,000 tons, and the hops 110,000 tons. Germany alone contained 26,143 breweries, producing 1,188,000,000 gallons, while Austro-Hungary had only 1,979 breweries, producing 354,000,000 gallons. The figures relating to the production per capita show that the smallest quantity, one liter per head, the liter being little more than a quart, is in Bosnia and Roumania. Greece shows 2½ liters, Russia 4½, France 31, Switzerland 40, Denmark 63, Germany 73, Upper Austria 116, Lower Austria 121, Belgium 150, Wurtemberg 218, and the kingdom of Bavaria leads all competitors with 248 liters, or nearly 65½ gallons for every man, woman and child in the country.

### SOME PATENT OFFICE CURIOSITIES.

Queer things have been patented in the United States. Here are a few of them: The cannon-plow is a presumably implement for subsoiling and warfare on the frontier; convenient the plow-beam is hollow and loaded it can easily be wheeled and fired, killing the Indians or the horses, whichever happen to be in the way; but the same inspired genius has patented the pistol pocket-book; when the innocent and unsuspecting burglar asks you for your pocket-book, you carelessly take it out and empty its contents into his abdomen. There is a claim in the Patent Office for a patent on the Lord's prayer, the specification being that the repetition of the same, "rapid and in a loud tone of voice," will cure stammering. Among odd inventions are "chicken hoppers," which walk the chicken right out of the garden when she tries to scratch; the "bee moth excluder," which automatically shuts up all the bee-hives when the hens go to roost; the "tapeworm fish hook," which speaks for itself; the "educational balloon," a toy balloon with a map of the world outlined on its surface; "side hill annihilators," stilts to fit on the down-hill legs of a

horse when he is plowing along a side-hill; and the "hen sur-priser," a device that drops the new-laid egg through the bottom of the nest, with the intent to beguile and wheedle the hen into at once laying another. One of the latest patents is an automatic bath-tub, which starts the hot and cold water at a given moment in the morning to which it has been set, maintains exactly the right temperature of it by graduating the flow of the water, rings a bell when all is ready, and two minutes later suddenly drops the sleeper's pillow about a foot and turns him out. The "illuminated cat" was devised by a genius. She is built of pasteboard and made luminous with phosphorus, and she sits in the corner the live-long night and fills the souls of rats and mice with terror. There is a tremendous activity in the toy division of the Patent Office, especially in automatic toys that can walk and talk. There are whistling tops, dogs that jump and bark, cackling hens, kicking mules, fighting roosters, "very exciting," the patentee casually remarks; running cars and locomotives, a scissors-grinder, a horse that walks naturally along the ground, and a baby that creeps on all fours with wonderful vraisemblance.

### EARLY RIPENING WHEAT FOR CANADA.

During several years past experiments have been in progress for the purpose of determining the most suitable wheat for growth in Manitoba and the Northwest of Canada. The red type variety, which is usually grown, has suffered from summer frosts coming before the wheat is ripe, and the object is to get a wheat which shall have all the qualities of the prevailing type with the great advantage of coming more quickly to maturity. The Ladoga, obtained from Russia, partially fulfills these conditions, but the results shown during the past two or three years have not been uniform. From a wheat cross-bred between the bearded April and the American Golden Drop a better showing has been obtained, as will be seen by the following comparison of wheats sown at the same time and grown under the same conditions:

| Ladoga (seed from)—           | Date of—                 |           |
|-------------------------------|--------------------------|-----------|
|                               | First appearance of ear. | Full ear. |
| (1) Russia.....               | June 17                  | June 24   |
| (2) Manitoba.....             | do                       | do        |
| (3) do .....                  | do                       | do        |
| (4) Northwest Territory.....  | June 19                  | June 26   |
| (5) Kent County, Ontario..... | do                       | do        |
| Red Fyfe.....                 | June 19                  | June 26   |
| New Cross-Bred .....          | June 16                  | June 24   |

The new cross-bred wheat is thus fully as early as the Ladoga, all being sown on the same day and treated alike. But after the ear is formed it is maturing and ripening quicker, and, with favorable weather, would be ready for cutting certainly a week before the Ladoga. The Red Fyfe matures and ripens the slowest of all. These experiments confirm the Canadian experience that the Ladoga is earlier than the Red Fyfe, and this should rather add to the testimony that the variety specially bred would also prove earlier than either when grown in the Dominion. But the new variety is not only earlier; it is better in every way. It is a larger cropper, the straw is longer and stouter, the ears are larger and the grain is heavier and bigger.

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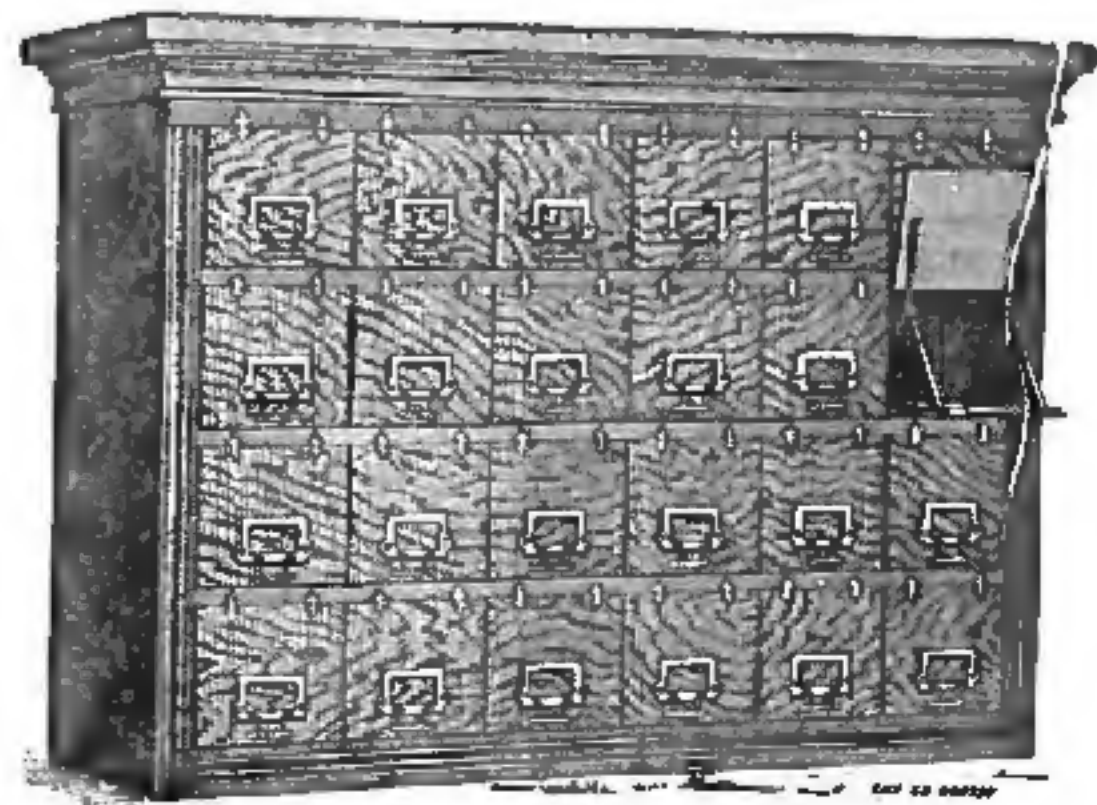
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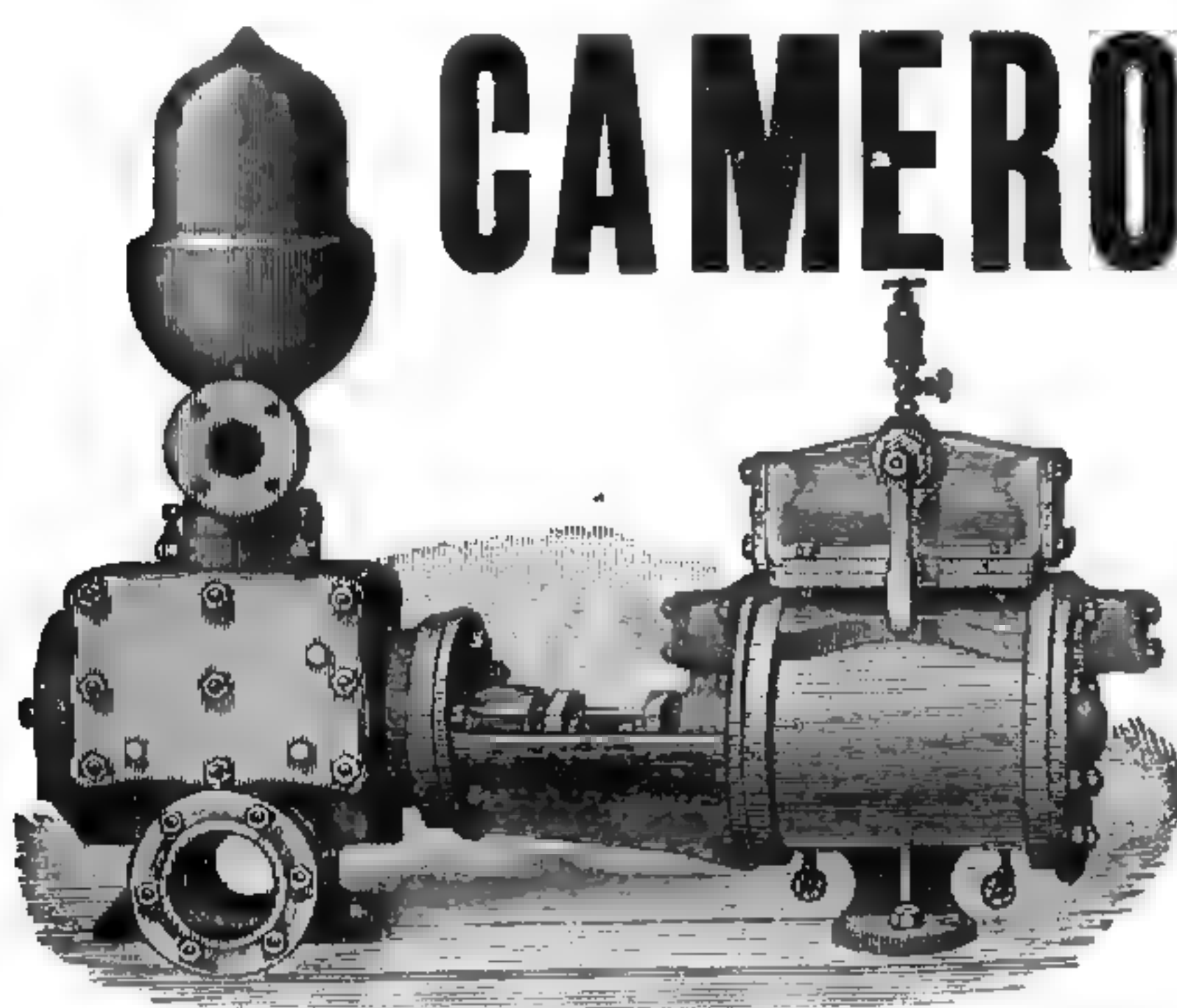
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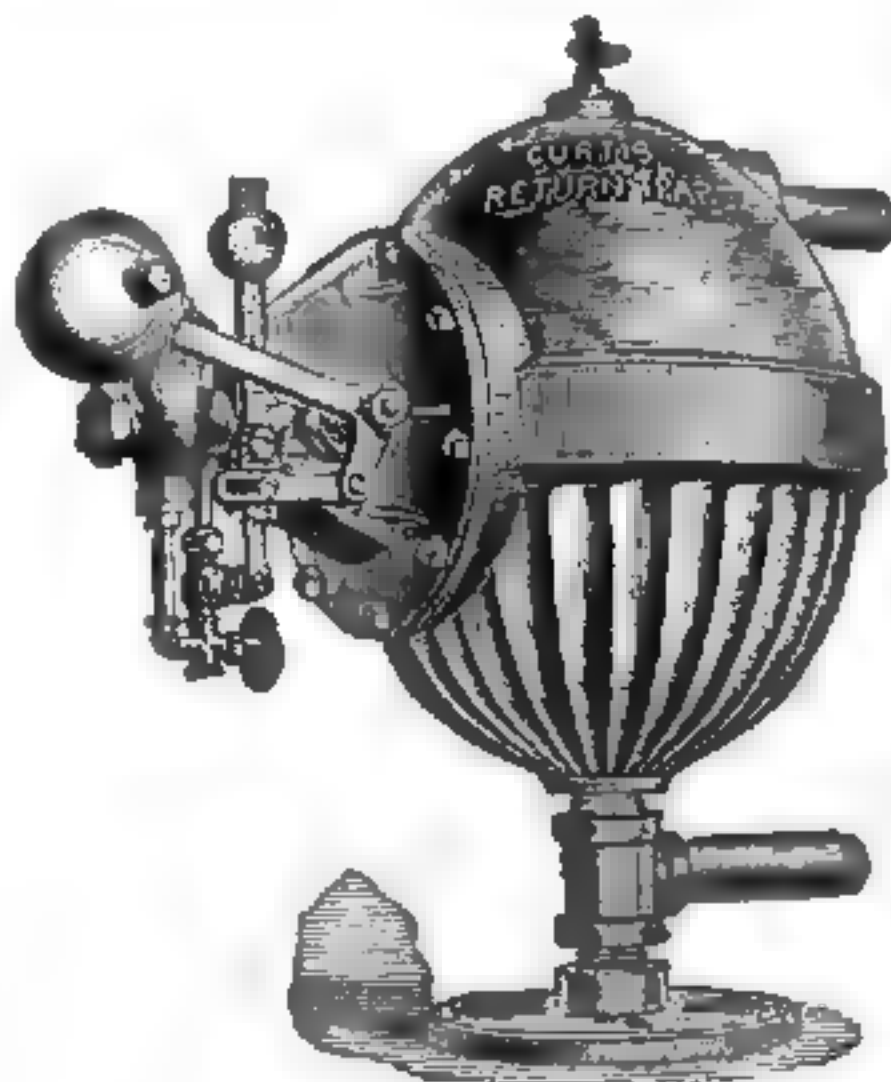
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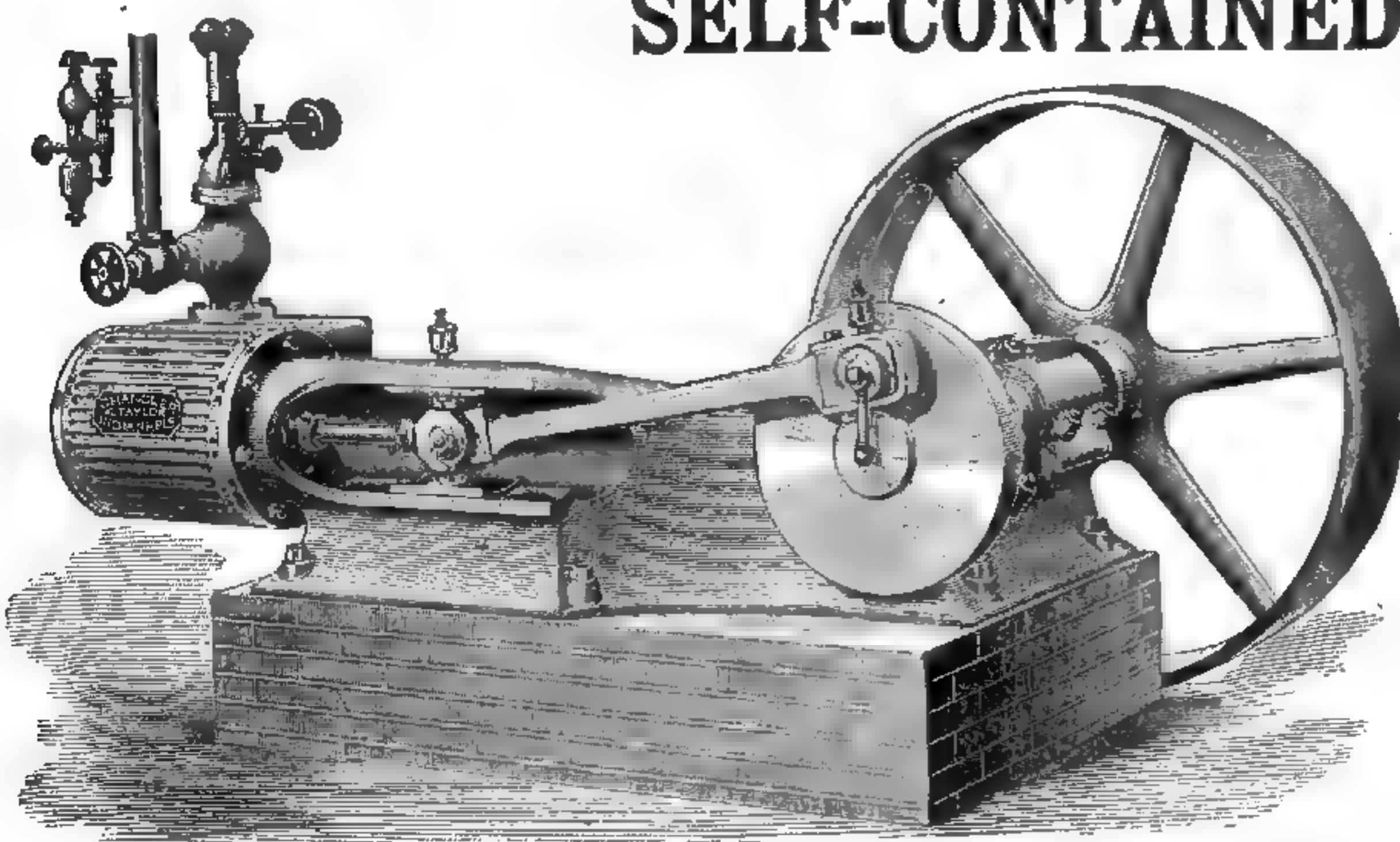
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# NOTES & NEWS

Baird, Tex., men will build an elevator.  
 Page & Higley, millers, Rutland, O., assigned.  
 W. H. Daniels, Mullen, S. C., builds a grist-mill.  
 M. K. Gray, Lexington, N. C., builds a grist-mill.  
 J. M. Toy, Putnam, Tex., has points on a grist-mill.  
 Paducah, Ky., men propose to build grain-elevators.  
 Wareham & Son, millers, Fort Scott, Kans., sold out.  
 Hoag's flour-mill, Manchester, Ia., burned; loss \$30,000.  
 C. B. Moon and others, Lovelady, Tex., build a grist-mill.  
 Kepler, Mulford & Co., millers, Waterville, O., received.  
 A. Dutton's grist-mill, Leicester, Mass., burned; loss \$1,500.  
 The Madelia, Minn., flour-mill burned; loss \$20,000; insurance \$70,000.  
 Jaycox & Campbell, flouring-mill, Cove, Ore., now A. J. Foster & Son.  
 Felix Leonard, an Indiana man, will build a flouring-mill at Bessemer, Ala.  
 Carroll & Barclay, Russellville, Ky., build a 150-barrel roller flouring-mill.  
 R. Marriner's flouring-mill, Cadott, Wis., burned; loss \$10,000; insurance \$6,000.  
 Grimes Bros., Lexington, N. C., add to their flouring-mill a 500-bushel corn-meal plant.  
 Oliver's oat-mill, Joliet, Ill., burned with other property; loss \$60,000; insurance \$15,000.  
 The Avoca Roller Mill Co. and the Centennial Mill Co., Avoca, Iowa, have consolidated.  
 The Todd Milling Co., Dallas, Tex., have increased their capital stock from \$100,000 to \$200,000.  
 John A. Banta's Macon City Eagle Roller Mills, Macon, Mo., lost \$13,000 by fire; insurance only \$2,000.  
 Sylvester Neelson's "Empire" and "Phoenix" flouring-mills, St. Catharines, Ontario, Canada, burned; loss \$200,000; insurance \$65,000.  
 J. B. Pound and others, Chattanooga, Tenn., incorporated the Chattanooga Novelty Works, capital \$50,000, to manufacture a patented flour receptacle.  
 A Gainesville, Tex., dispatch of August 11 says: A terrific explosion occurred in Scruggs & Whaley's three-story flour-mill at noon yesterday. All the men had gone home to dinner except engineer Boosley. The east end of the building and the roof were blown out. The boiler was blown over tree tops and houses and landed 300 feet away. Boosley was shot out with the debris and was thrown against a pile of wood 200 feet away, but was not severely hurt.  
 "It is worth noting," says Beerbohm's List of August 10, "that the River Plate has recently purchased a cargo of red winter wheat for shipment from New Orleans at 40s c. i. f., and two cargoes of Californian at 37s@37s 6d." It is "worth noting" for several reasons, one of which is that the "River Plate" district is one of the bugaboo sections that are always just about to destroy American wheat growing and exportation.  
 McNear & Co.'s elevator, Port Acosta, Cal., burned with other property; loss \$600,000; about 12,000 tons of grain were burned, with other property; insurance \$347,000.  
 Says a Philadelphia, Pa., paper: The high grades of wheat of Philadelphia have enjoyed an enviable reputation in foreign markets, not only on account of the grain being ordered cleaned by the Chief Grain Inspector when it becomes necessary, but from the standard on which it is graded. It is not surprising, then, that the best qualities of wheat should be shipped to Philadelphia. A comparison of the inspections at Philadelphia and New York from August 1 to 10, inclusive, shows that out of 1,141 cars received at Philadelphia, 810 cars, or 71 per cent. of the whole, graded No. 2 red or better, while in New York 242 cars out of 801, or about 30 per cent. inspected, graded No. 2 and above.

## BOOKS AND PAMPHLETS.

The September number of *Scribner's Magazine* is full of merit and interest. The contents include: "Alexandre Dumas," by Andrew Lang; "To the Dandelion," by Zoe D. Underhill; "Nepigon River Fishing," by A. R. Macdonough; "Lost," by Chas. H. Lueders; "In The Valley," I-III, by Harold Frederic; "Youth and Time," by D. C. Scott; "The Place of the Fitting School in American Education," by Geo. T. Ladd; "Night Witchery," by W. H. Gibson; "Out of the New England Granite," by T. R. Sullivan; "Safety in Railroad Travel," by A. G. Prout; "The Master of Ballantrae," XI, by Robert L. Stevenson; "Drought," by A. Lampman; "The Small Arms of European Armies," by W. W. Kimball; "The Domino," by Edith M. Thomas, and "Three Dream Heroines," by Justin McCarthy. The illustrations are, as usual, superb and beautiful. This magazine grows better with each succeeding number. Address Chas. Scribner's Sons, N. Y.

One of the most valuable and noteworthy books for the convenience of men who require commercial computations is "Ropp's Commercial Calculator," written and published by that well-known mathematical genius, Mr. C. Ropp, of Bloomington, Ill. The author calls it "A Practical Arithmetic, for Practical Purposes," and that is exactly what it is. All of the best features of the so-called "Calculators" are contained in it, but its distinctive value lies in the novel features that are the result of Mr. Ropp's own genius and industry. Grain men and millers will find in it the most complete and valuable set of tables ever worked out to save them labor in computation. Lumber handlers will find in it a set of measure tables that are invaluable. In these tables Mr. Ropp shows the difference between the Doyle and Scribner measurements and his own, and he points out in their methods the errors that have given rise to so much disputing among log-handlers. Iron handlers will find tables for their use, and there are numerous other specialties in the way of tables that make this 128-page book worth ten times its price. The book has received the commendation of Professor Olney, the well-known mathematician of Ann Arbor University, of Professor Geo. W. Smith, mathematician of Woodward College, Cincinnati, O., of the Chicago Times and of the Scientific American. We most cheerfully add our most cordial commendation. For terms address the publisher and author, C. Ropp, Bloomington, Ill.

The September *Century* contains a paper on Napoleon Bonaparte of unusual interest and importance, being contemporary accounts, by British officers, of the ex-Emperor's exile to Elba, his voyage to St. Helena and life on that island. The Lincoln installment is crowded with absolutely new material, and has to do mainly with Lincoln's triumphant re-election. The authors quote freely from unpublished MSS. by Lincoln, and their own letters and diaries. The sketch of Chase's career is continued to his death, and includes an account of his appointment as Chief-Justice. A propos of the latter portion of the Lincoln history is the article by Justice Bradley of the Supreme Court on Chief-Justice Marshall, accompanying a rare portrait of the great Chief-Justice by the French artist, Mémín. An article appropriate to the season is Mr. Hamilton Gibson's ingenious and original study of butterfly and plant life, accompanied with illustrations by the author. This paper is entitled, "Winged Botanists." The American artist, Mr. Wores, writes most interestingly of Japanese things; the text is illuminated by reproduction of a number of his oil paintings. Mr. Paine presents an illustrated study of the identity of "The Pharaoh of the Exodus and his Son." George Kennan closes his account of "The Kara Political Prison." Another illustrated article is Emmet O'Brien's account of "Telegraphy in Battle" during the civil war. In fiction there is the second installment of Joel Chandler Harris's "The Old Bascom Place"; a story by Cable, "Attalie Brouillard"; and a story by Mrs. Eichberg King, "Jufrow Van Steen," illustrated by Edwards. James Jeffrey Roche has a poem on "Albemarle Cushing," and there are other poems by Charlotte Fiske Bates, Langdon Elwyn Mitchell, Louisa Morgan-Smith, Nathan Haskell Dole and Richard E. Burton. "Ballot Reform Progress" and "Eight Hours a Day" are treated editorially. Brander Matthews contributes a timely "Open Letter" on "The Centenary of Fenimore Cooper," and "Bric-a-Brac" contains contributions by Clinton Scollard, J. A. Macan and George Birdseye.



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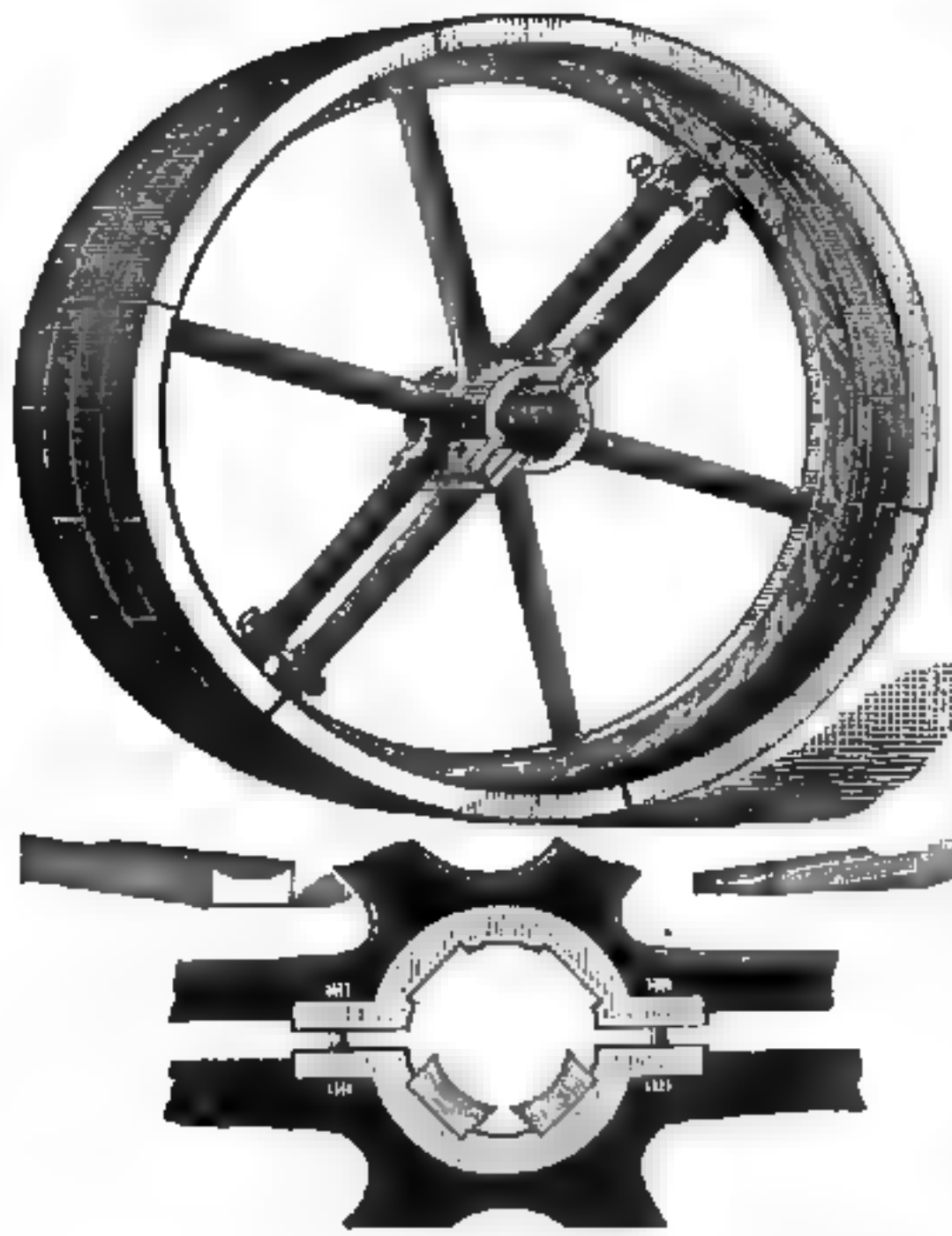


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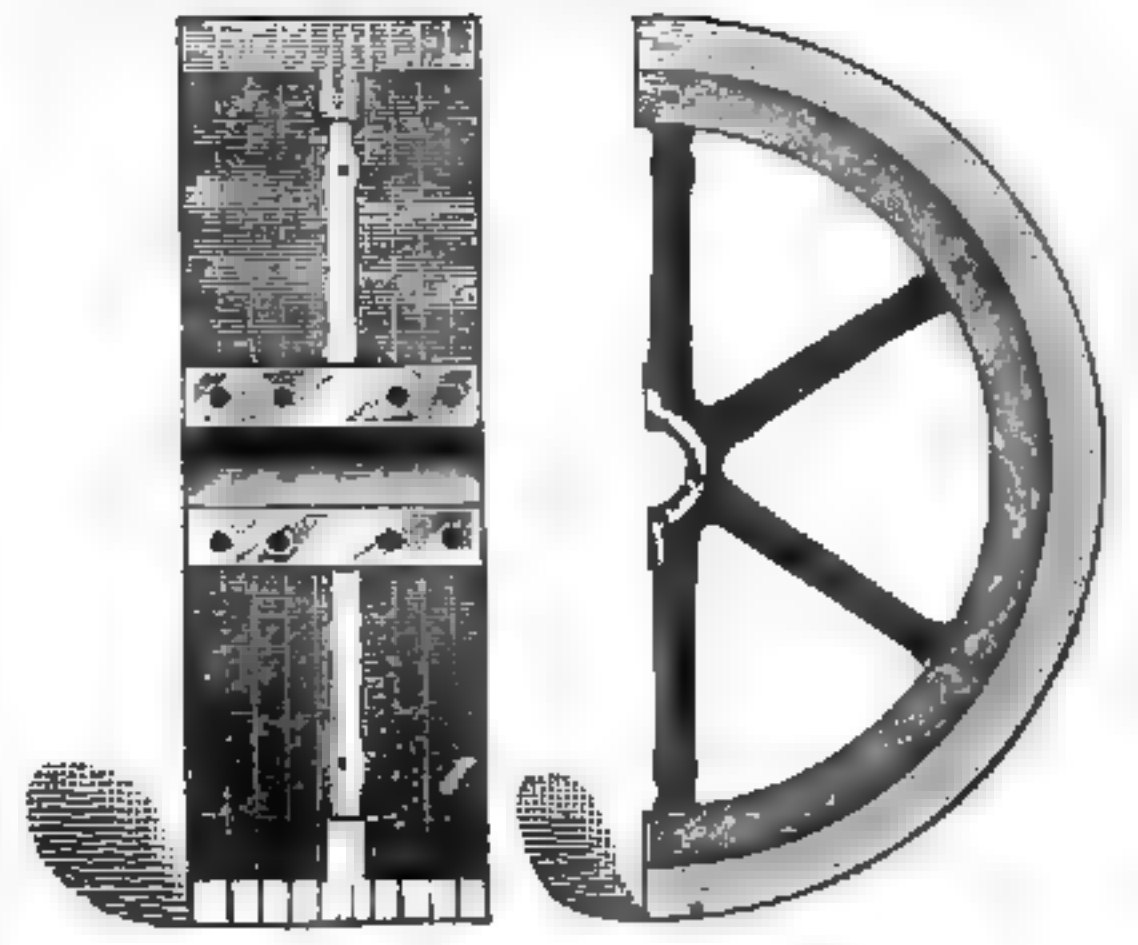
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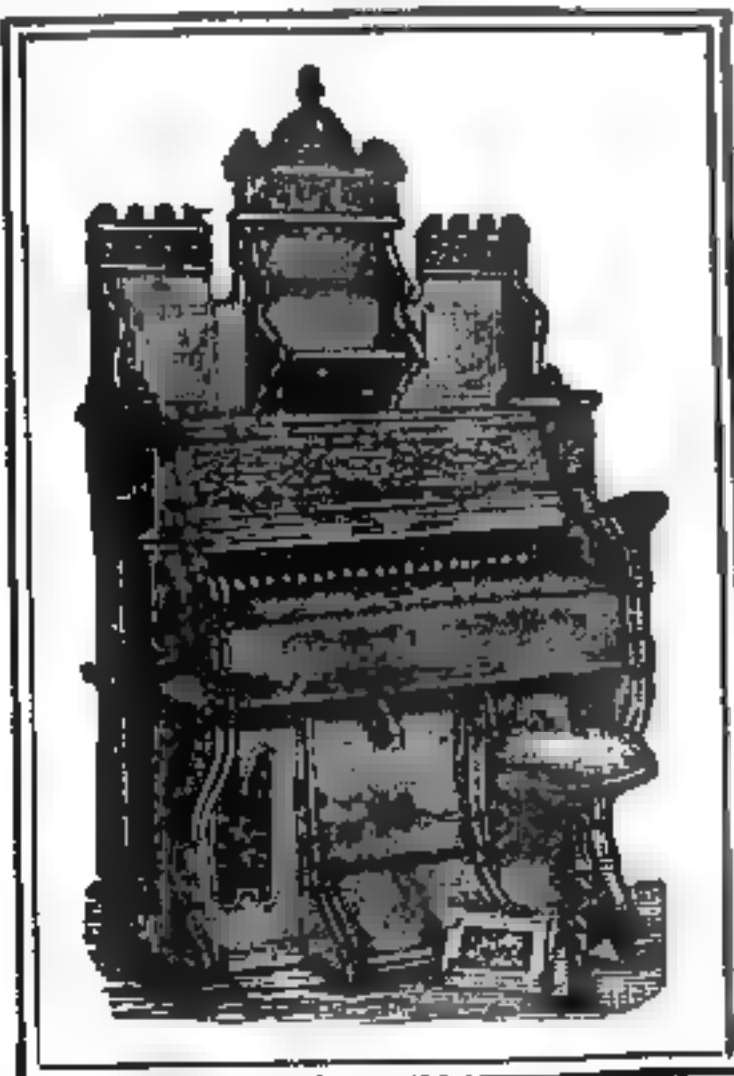
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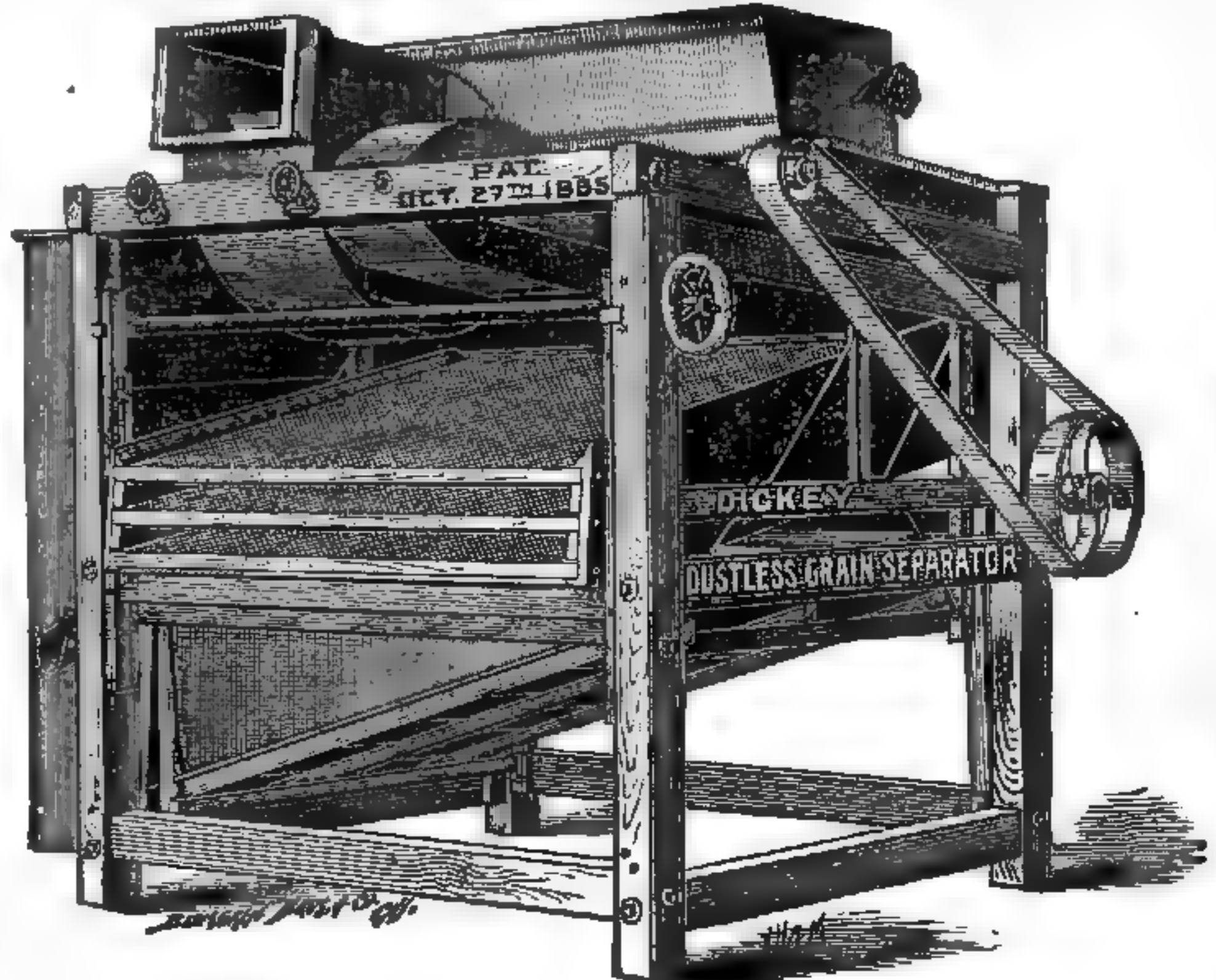
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## EUROPEAN ECHOES.

THE "Bulletin Des Halles" has reduced its estimate of the French crop from 360,000,000 bushels to 312,000,000 bushels.

THERE are to be two International Grain Congresses at Paris this year. One is to be held in connection with the Millers' Congress, on August 20, 21 and 22, and the Paris "Bulletin des Halles" announces another, under distinguished patronage, for September 10, 11 and 12, at the Bourse de Commerce.

SAYS the London "Millers' Gazette" of August 12: A meeting was held at the offices of the London Produce Clearing House, on Thursday morning, at which a number of gentlemen connected with the wheat trade were present to discuss the necessary arrangements for the commencement of official quotations of wheat "futures."

LATE mail reports from France announce that the yield of wheat will not be so heavy as was expected. Reports from Nancy indicate that wheat matured somewhat too quickly and will probably show a rather large quantity of ill-nourished grain. At Moissac threshing was in full blast with immense disappointment in the small yield, and the weather was against the quality. From all accounts at Nantes the crop about equals that of 1888 in quantity, while the quality is said to be better than last year. At Aix growers were greatly disappointed, the crop after promising so well yielding a small quantity. Wheat at Dijon was for the greater part damp and in quantity far from large, and instead of being sellers, as was expected, that district is now calculated upon as a buyer.

SAYS the London "Millers' Gazette:" The imports of oatmeal into the United Kingdom have very much increased compared with last year; indeed this trade seems to be extending rather rapidly, especially from Canada. During July we imported 19,358 hundredweights from Canada and 10,504 hundredweights from America, against 580 hundredweights from Canada and 1,128 hundredweights from America last year. In the seven months ended July 31 America has sent us 104,966 hundredweights, and Canada 62,727 hundredweights out of a total import of 158,115 hundredweights, while last year we imported in these seven months only 17,497 hundredweights, nearly all from America. The present imports are of course but trifling compared with the Scotch and Irish manufacture, and neither American nor Canadian oatmeal millers, although they have largely improved their methods of manufacture, can ever hope to reach the quality of our leading Irish and Scotch makers, lacking as they do the necessary quality of oats.

A RECENT number of the "Echo Agricole," of Paris, estimates the wheat crop of the world for the year 1889 at 1,977,600,000 bushels, of which the imports in various countries will be 340,240,000 bushels and the exports 308,714,000 bush-

els. Of exporting countries the United States is credited with 90,000,000 bushels, Russia with 109,000,000 bushels, India with 27,000,000 bushels, the Argentine Republic and Chili with 11,000,000 bushels, and Australasia with 12,000,000 bushels. Great Britain, it is estimated, will import 151,000,000 bushels and France 68,000,000 bushels of wheat. The deficit in these estimates of the moving crops, the difference, in fact, between the exports and imports, is about 31,500,000 bushels, according to the French calculation, while an English estimate puts it at 72,000,000 bushels. Sir J. B. Lawes, in a recent publication, gives the following figures: Population of Great Britain 37,771,000; annual consumption of wheat 213,407,000 bushels; crop 71,580,000 bushels; seed for 2,663,000 acres 5,326,000 bushels. Deducting the amount required for seed from the aggregate crop, and deducting this from the aggregate consumption, there remain 147,153,000 bushels as the import, which is within 3,000,000 of bushels of the estimate of the "Echo Agricole." The French journal places the wheat crop of the world for the past year at about 86,000,000 bushels less than the returns for 1887, and about 50,000,000 bushels below that of 1886 and of 1885.

SAYS the London "Miller" of August 12: France is clearing its harvest fields, although weather has often interrupted work. In the north cutting is nearly all over, and on the mountainous barley fields of Auvergne a fine crop is promised and is ready for the sickle. The lowest estimates of this year's wheat yield in France infer an import wanted of only 2,000,000 quarters, while a majority of estimates reckon the crop will be sufficient for wants. Of course there are some districts that can obtain foreign wheat supplies on the coast more cheaply than from the remote wheat-growing departments, and these districts moreover are used to and like the Russian and other imported supplies. France is standing aside at present and does not compete with English buyers of wheat. Germany has an irregular and in the main a deficient wheat crop, from the most recent estimates. Hamburg has been firm for wheat. Berlin quotes wheat 41s., rye 34s. 8d. per 480 pounds. Recent markets have had less strength than those held early in the week. Holland reports having gathered in most of its crops in fairly good condition. Trade for wheat is slow, and at Amsterdam business has favored buyers. Hungary appears to have suffered seriously this season, and the wheat and maize crops are unsatisfactory in sample as well as deficient in quantity. Probably the Vienna and Pesth markets are the strongest in Europe. Flour is held above the views of English buyers. India, shipping weekly about 50,000 quarters of wheat, operates with reserve, but value remains rather weak, from 34s. 6d. downwards. This season's exports are up to date about 1,500,000 quarters, against 2,000,000 quarters last year in the same time. Russia keeps her old stocks confidently, and the verdict that winter and spring wheat together is deficient and inferior seems nearer the truth than the recent declaration that the total yield would be an average.



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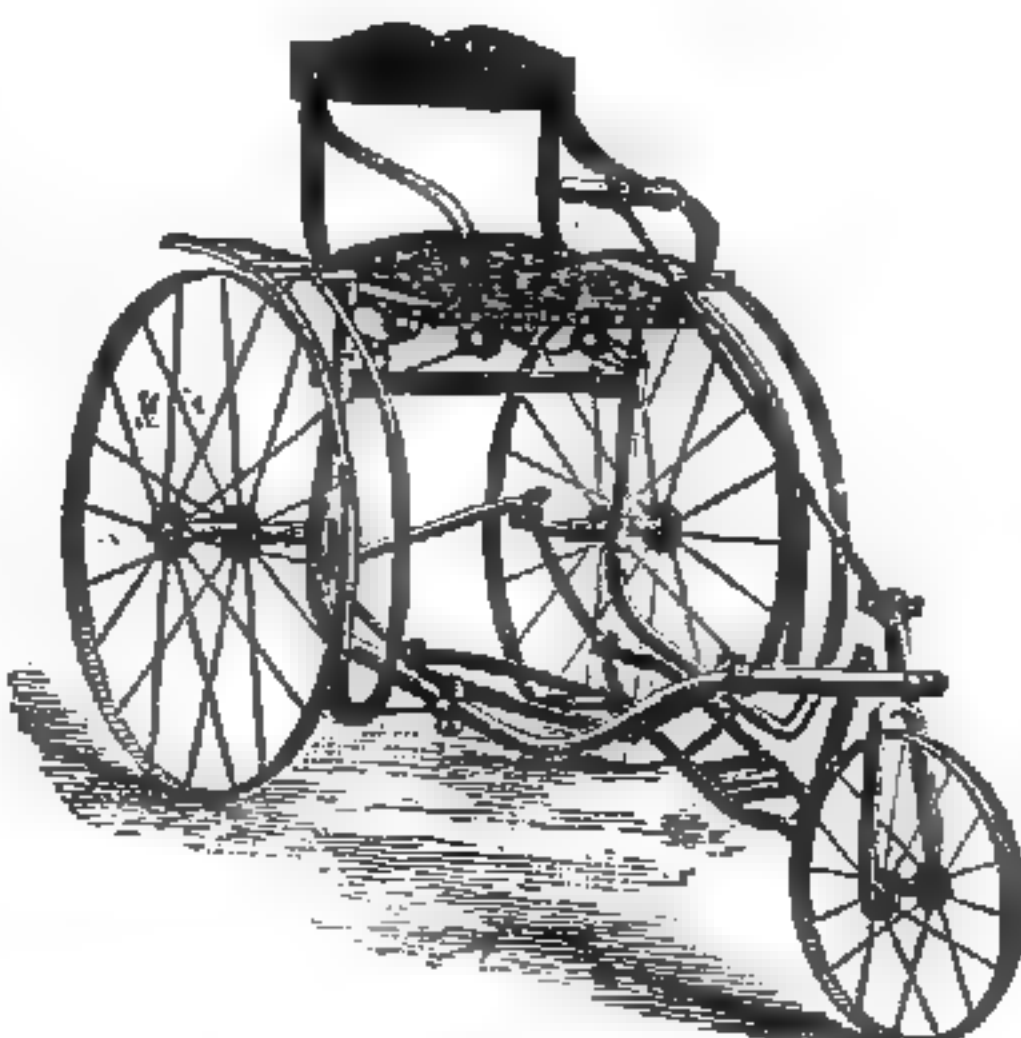
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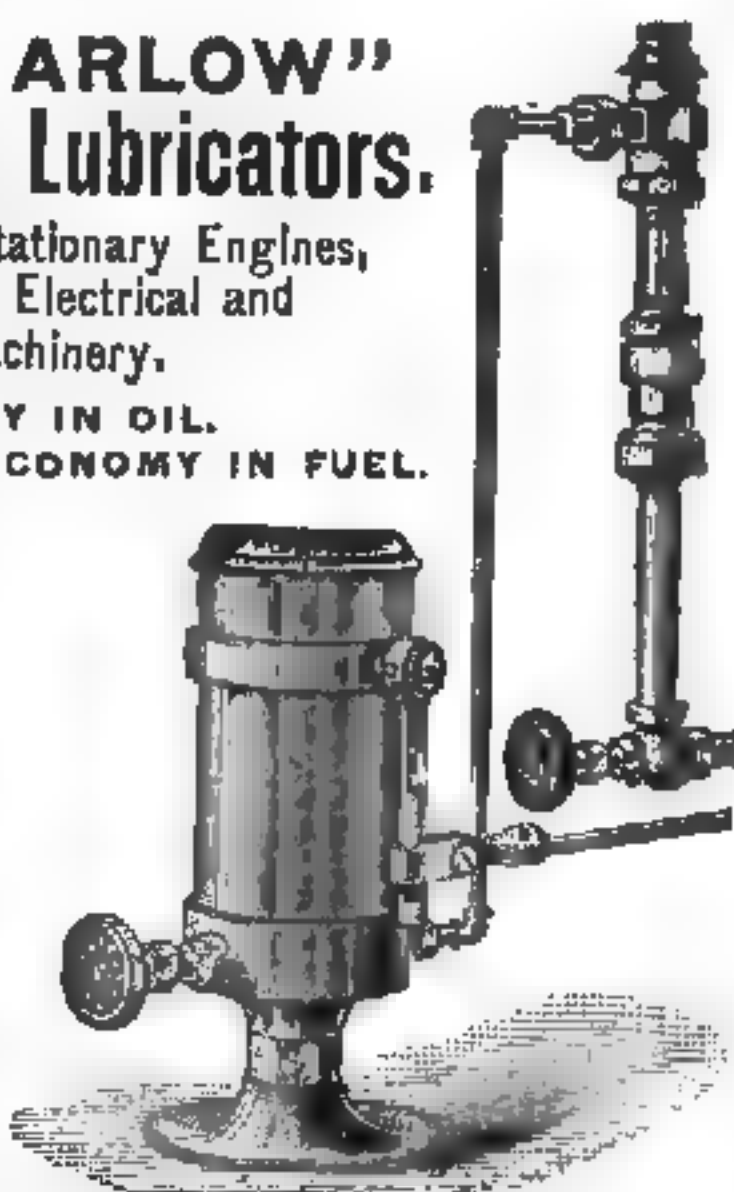
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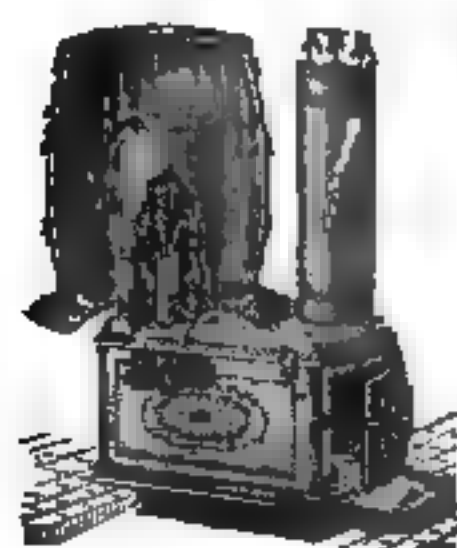
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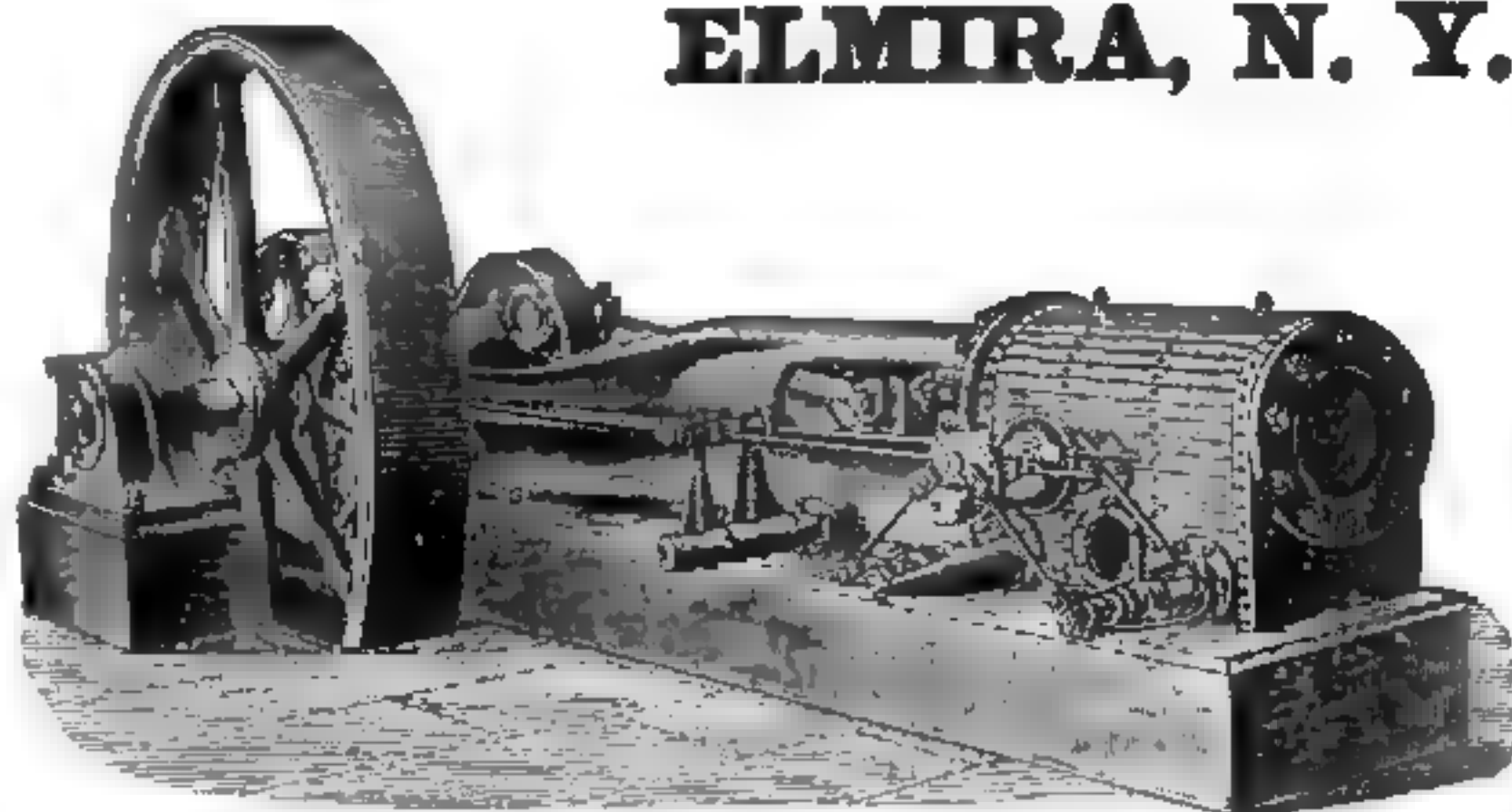
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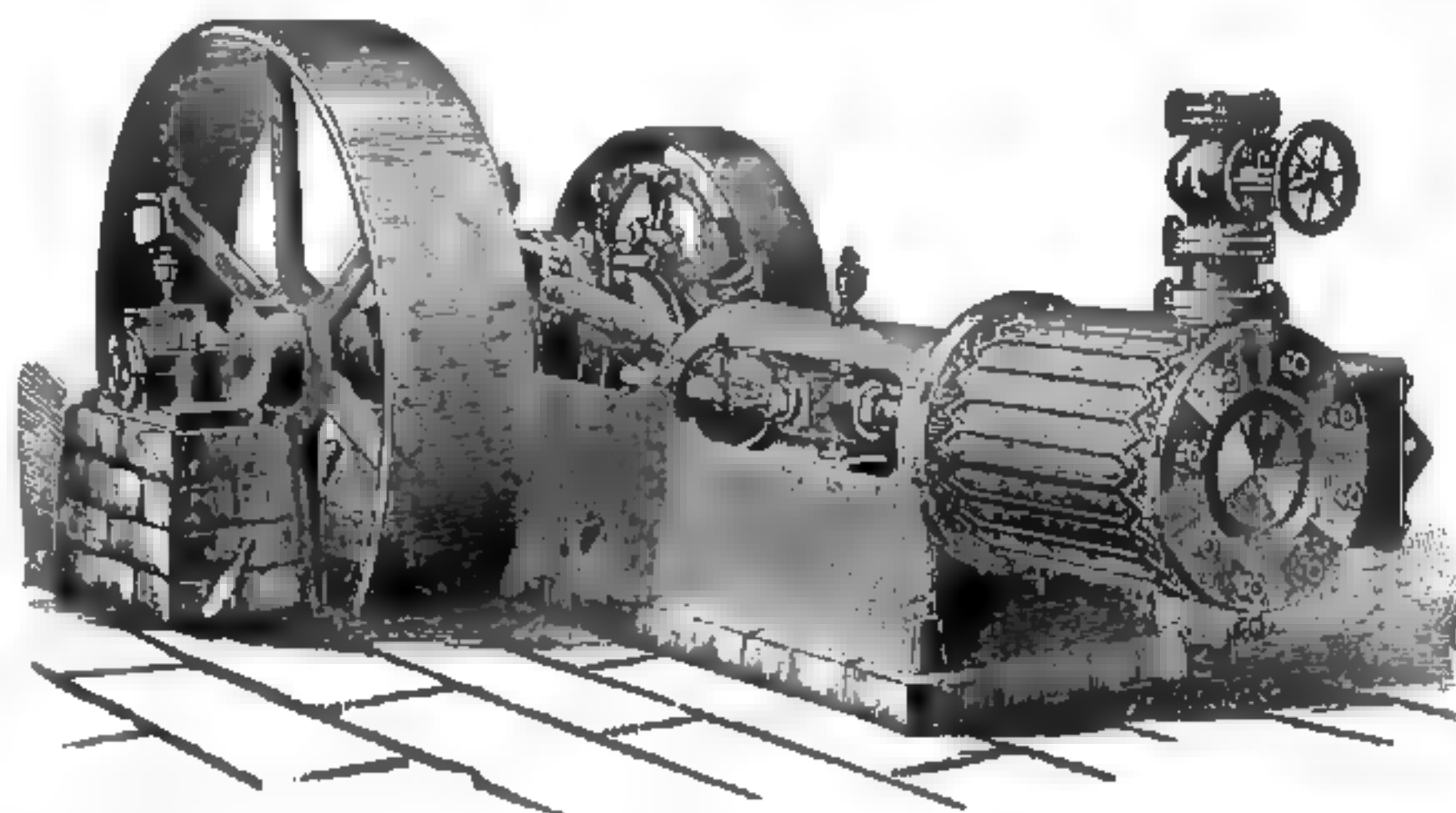


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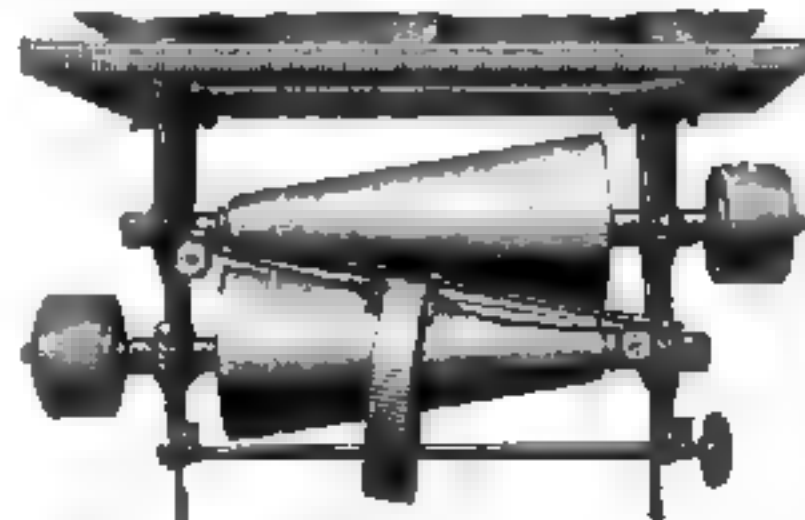
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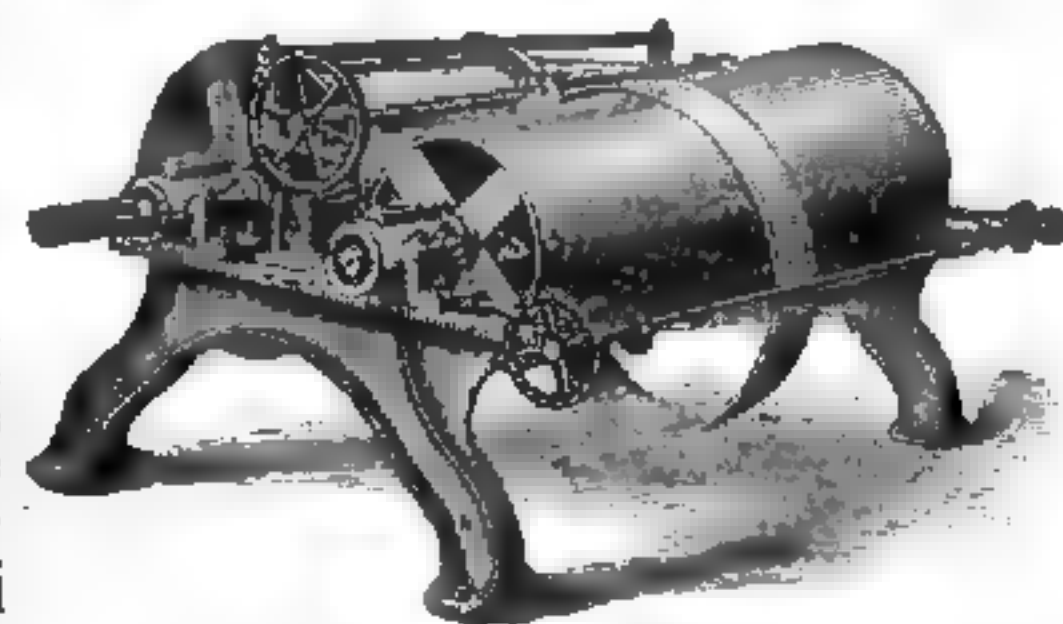
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OFFICE OF THE MILLING WORLD,  
BUFFALO, N. Y., Aug. 31, 1889.

Friday of last week brought lower and more active markets on better weather reports at home and abroad, lower cables from Europe and larger receipts in the West. August wheat closed at 83½c. August corn closed at 43½c. and oats at 26½c. Wheat flour was dull, weak and lower on all grades except fine and no-grades, which were scarce and steady. Superfines and all grades up to patents were 5@15c. lower on spot. The minor lines were quiet and featureless.

Saturday was another dull and easy day, on lack of demand and free receipts in the West. August wheat closed at 83½c. Options only 810,000 bushels. August corn closed at 43c. and oats at 26½c. Wheat flour was dull and easy, although holders in New York were steady. Business was very small in every line. The minor lines were featureless.

Monday was a day of surprises in the wheat market. The sensation of the day was the receipt of the following cablegram from Europe: "The official statement of the Vienna Grain Congress follows: Wheat in Europe 15 per cent. less than last year. The shortage in Austria, Hungary, Russia and Roumania is 160,000,000 bushels. The percentages of condition follow:

| 1888.            | 1889. | Russia—         | 1888. | 1889. |
|------------------|-------|-----------------|-------|-------|
| Austria.....107  | 83    | Podolia.....    | 80    | 97    |
| Hungary.....110  | 72    | Bessarabia..... | 125   | 50    |
| Prussia.....90   | 83    | Poland.....     | 87    | 28    |
| Saxony.....95    | 80    | Central.....    | 85    | 67    |
| Bavaria.....105  | 85    | Cherson & Eka-  |       |       |
| Wurtemberg..90   | 85    | terino, Slav..  | 120   | 41    |
| Mecklenburg..98  | 85    | Courland and .  |       |       |
| Denmark.....80   | 80    | Lithuanian..... | 95    | 50    |
| Norway & Swen    | 95    | Estland.....    | 92    | 85    |
| Italy.....75     | 96    | Roumania—       |       |       |
| Switzerland...78 | 100   | Waldavia.....   | 130   | 77    |
| Holland and...   |       | Little Waldavia | 100   | 91    |
| Belgium.....82   | 105   | Gr't Waldavia.. | 120   | 70    |
| France.....80    | 98    | Servia.....     | 120   | 98    |
| United Kgdum     | 78    | Egypt.....      | 110   | 70    |

The Vienna report indicates that the wheat crop of the world is undoubtedly short by 200,000,000 to 228,000,000 bushels. Excepting Turkey, Greece, Spain and Portugal, for which no figures are received, Europe shows a full total of 892,357,000 bushels, against 1,124,099,000 bushels last year and 1,114,929,000 bushels average crop for five years. This makes an apparent European deficiency of 231,742,000 bushels compared with last year, and of 222,622,000 bushels compared with the average of 5 years. Under the stimulus of these figures August wheat went up to 84½c. Options 3,000,000 bushels. August corn closed at 42½c. and oats at 26½c. The visible supply in the United States and Canada was:

|             | 1889.      | 1888.      | 1887.      |
|-------------|------------|------------|------------|
|             | Aug. 24.   | Aug. 25.   | Aug. 27.   |
| Wheat.....  | 14,291,270 | 27,170,952 | 30,572,750 |
| Corn.....   | 9,476,150  | 8,121,917  | 6,372,905  |
| Oats.....   | 5,611,809  | 2,347,570  | 4,780,723  |
| Rye.....    | 870,656    | 231,062    | 289,478    |
| Barley..... | 327,758    | 187,195    | 226,084    |

Wheat flour opened dull and weak and improved at the close with wheat. The other lines were featureless.

Tuesday brought a lower opening in wheat, followed by active and higher markets on covering by shorts. The Vienna report of shortage found deniers and confirmers, and it was reported that France has 60,000,000 bushels of wheat more than she had last year, but it was impossible to depress the market. August wheat opened at 85½c. and closed at 86½c. Options 2,750,000 bushels. The closing was unsettled,

but strong. August corn closed at 43½c. and oats at 25½c. Wheat flour was in fair home and export demand at unchanged prices. The minor lines were featureless. The "official" conclusions of the Vienna grain congress on the European wheat crop were cabled on Tuesday, and were as follows:

|             | 1888.      | 1889.       |
|-------------|------------|-------------|
| Country.    | Condition. | Bush.       |
| Austria...  | 107        | 38,738,700  |
| Hungary...  | 110        | 136,871,064 |
| Germany...  | 90         | 68,112,000  |
| Denmark...  | 80         | 4,824,600   |
| Norway      |            |             |
| Sweden      | 95         | 4,420,870   |
| Italy.....  | 75         | 106,195,792 |
| Switzerland | 78         | 1,646,400   |
| Holland     |            |             |
| Belgium     | 82         | 19,986,851  |
| France...   | 80         | 273,668,345 |
| U. K'gdom   | 78         | 74,473,647  |
| Russia....  | 98         | 325,054,000 |
| Roumania.   | 117        | 52,508,000  |
| Servia....  | 120        | 7,603,364   |

Total.... 1,114,098,633 989,952,124  
Shortage, 124,146,509.

The European countries for which no averages are given by the Vienna people are Turkey, Greece, Spain and Portugal. Their production last year was as follows:

|               |    |             |
|---------------|----|-------------|
| Turkey.....   | bu | 39,046,000  |
| Greece.....   |    | 4,664,000   |
| Spain.....    |    | 101,174,700 |
| Portugal..... |    | 6,860,000   |

Total..... 151,744,700

In the absence of data to the contrary it may be assumed that there has been no important change in the production of these four countries. Adopting last year's figures for Turkey, Greece, Spain and Portugal for this year, the total European production for 1889 is therefore shown to be 1,141,696,824 bushels. The European crops for the present and preceding five years compare as follows:

|           |    |               |
|-----------|----|---------------|
| 1889..... | bu | 1,141,696,824 |
| 1888..... |    | 1,265,843,333 |
| 1887..... |    | 1,351,312,533 |
| 1886..... |    | 1,190,143,421 |
| 1885..... |    | 1,217,089,982 |
| 1884..... |    | 1,201,880,411 |

Average for 5 years..... 1,223,223,440

Wednesday was a day of active and irregular markets, led by wheat. August wheat opened at 86c. and closed at 85½c. Weather in the west was fine. Options 3,650,000 bushels. August corn ruled at 43½c. and oats at 25½c. Rye grain was nominally 51½c., c. i. f., for Western, 52@53c. for ditto spot, and 56c. for No. 1 delivered. Malt was dull at 90c. @ \$1 for Canada, and \$1.05 for choice. Mill-feed was dull at the following quotations: 40-lbs, 55c; 60-lbs, 52½c; 80-lbs, 55c; 100-lbs, 70@72½c; sharps, 77½c. and rye, 70c.—all asked, and fancy 40-lbs as 10c. more.

Wheat flour was in good export demand for low and medium grades, at steady prices. Trade in general was fair. Following are the quotations:

|             | 1889.      | 1888.      | 1887.      |
|-------------|------------|------------|------------|
|             | Aug. 24.   | Aug. 25.   | Aug. 27.   |
| Wheat.....  | 14,291,270 | 27,170,952 | 30,572,750 |
| Corn.....   | 9,476,150  | 8,121,917  | 6,372,905  |
| Oats.....   | 5,611,809  | 2,347,570  | 4,780,723  |
| Rye.....    | 870,656    | 231,062    | 289,478    |
| Barley..... | 327,758    | 187,195    | 226,084    |

|               |           |           |
|---------------|-----------|-----------|
| Clear.....    | 3.35@3.65 | 3.65@3.80 |
| Straight..... | 4.00@4.40 | 4.40@5.15 |
| Patent.....   | 5.00@5.80 | 5.40@5.75 |

#### WINTER FLOUR.

|                  | Sacks.      | Barrels.    |
|------------------|-------------|-------------|
| No grade.....    | \$1.75@2.00 | \$....@.... |
| Fine.....        | 2.25@2.50   | 2.35@2.60   |
| Superfine.....   | 2.60@2.75   | 2.60@2.80   |
| Extra No. 2..... | 2.65@2.90   | 2.75@3.00   |
| Extra No. 1..... | 3.10@4.15   | 3.25@4.10   |
| Clear.....       | 3.65@4.05   | 4.00@4.15   |
| Straight.....    | 4.25@4.40   | 4.45@4.55   |
| Patent.....      | 4.50@4.65   | 4.75@4.90   |

#### CITY MILLS.

|                  |           |
|------------------|-----------|
| W. I grades..... | 4.20@4.25 |
| Low grades.....  | 2.60@2.70 |
| Patents.....     | 5.10@5.65 |

Rye flour was in improved demand at \$2.75@2.90 for superfine State. Corn products were slow at the following quotations: Coarse city meal 84c; fine yellow do \$1.00; fine white \$1.05; Brandywine \$2.75; Southern and Western \$2.60@2.75; grits \$2.60@2.70; hominy grits \$3.00 in bbls, \$1.20 in sacks; granulated brewers' meal, \$1.30 per 100 lbs in sacks. Corn flour \$2.00@3.00 for bbls; chops 60@66c.

Thursday brought steady markets. August wheat closed at 85½c., September at 84½c., October at 85½c. and November at 86½c. Options 2,088,000 bushels. August corn closed at 43½c. and September at 42½c. August oats closed at 26½c. and September at 26c. Wheat flour was steady and unchanged. The minor lines were quiet.

#### BUFFALO MARKETS.

WHEAT—Yesterday the wheat markets were rather steady. Here there was a fair demand for hard spring. In two lots 14,000 bu 1887 No. 1 hard sold at \$1; only about 15,000 bu remain unsold of the 150,000 bu of that grade put on the market at a largely reduced price a few weeks ago. For the 1888 No. 1 hard 95c was still asked, as far as small lots were concerned, but round lots were available at a cut of about 2c. A sale of 14,000 bu was reported on private terms—probably about 92½c, at which price the 18,000 bu changed hands the previous day. No. 1 Northern of 1887 was quoted at 90c, ditto 1888 at 89c, No. Northern at 88c. At Chicago August opened at 78c, touched 78½c, and closed at 78c—same as day before; December opened at 78½c, its lowest point, sold up to 79½c and closed at 79½c, ¾c advance. At Duluth August closed at 82c, unchanged; December at 81½c, ¾c lower. At New York August, at 85½c, closed ¼c better; December closed at 87½c, also without change. Winter wheat was dull, almost neglected. The only sale reported was 1 car old No. 3 red at 78c in store. Offerings were fair, and prices easy. Old No. 2 red closed at 90c asked, new ditto at 85@86c, old extra No. 2 red at 78@80c, new ditto at 79½@80½c, old No. 3 red at 77@78c, new ditto at 75@76c, new No. 4 red at 78@74c, old No. 3 amber at 86c, new No. 1 red at 90c, old No. 1 white at 97c, old extra No. 2 white at 96½c, new No. 2 white at 84c, old No. 1 California white at 92c. New No. 1 white, to arrive, was offered at about 89c. COZN—was dull and closed a shade easier. Sales comprised 1 car No. 2 yellow on track at 41½c, 1 car No. 3 on track at 39½c, 4 cars ditto in store at 38½c, 4 cars No. 3 in store at 38½c, 6,000 bu ditto at 38½c. At the close No. 3 in store was offered at 38½c, No. 3 at 38½@38¾c. OATS—were in light request, especial new No. 2 white. Such to keep from storing, were offered at 26c on track, but buyers were hard to find. Otherwise the market was steady. Sales included 1 car old No. 1 white at 23½c on track, 1 car ditto at 28c in store, 2 cars new No. 2 white at 27c on track, 30,000 bu new No. 3 white at 24½c in store, 1 car old No. 2 mixed at 25½c in store. Old No. 1 white closed at 28@29c, new ditto at 28@29c, new No. 3 white at 24@24½c, old No. 1 mixed at 25½c, new ditto at 24½c. RYE—was nominally quoted at about 46c for new No. 1 Western. FLOUR—was dull and easy, and millfeed unchanged. CANAL FREIGHTS—were marked up ¼c and posted at 4½c on wheat and flaxseed, 4c on corn and rye, 2½c on oats to New York.

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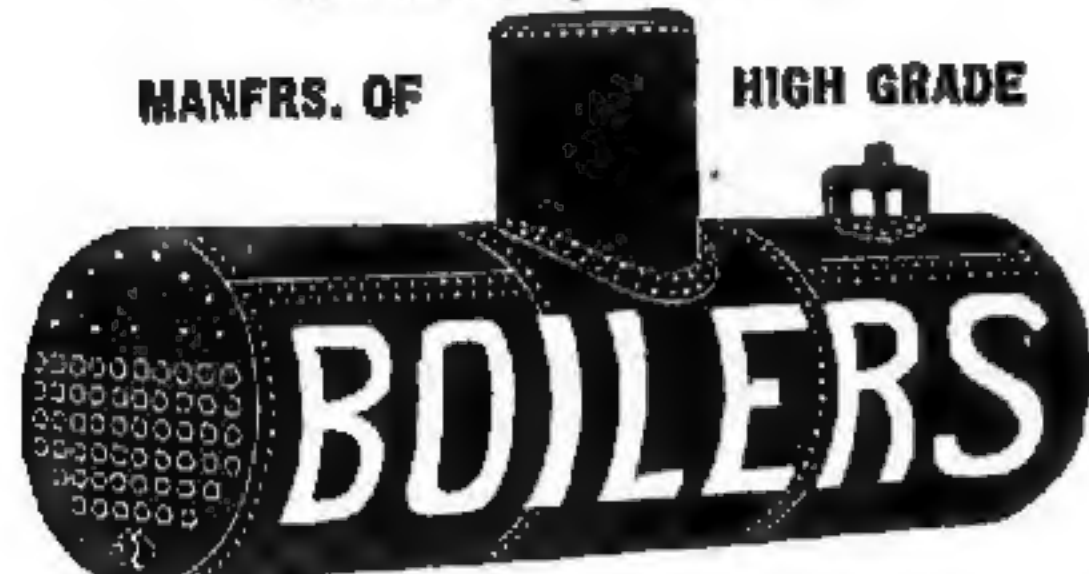
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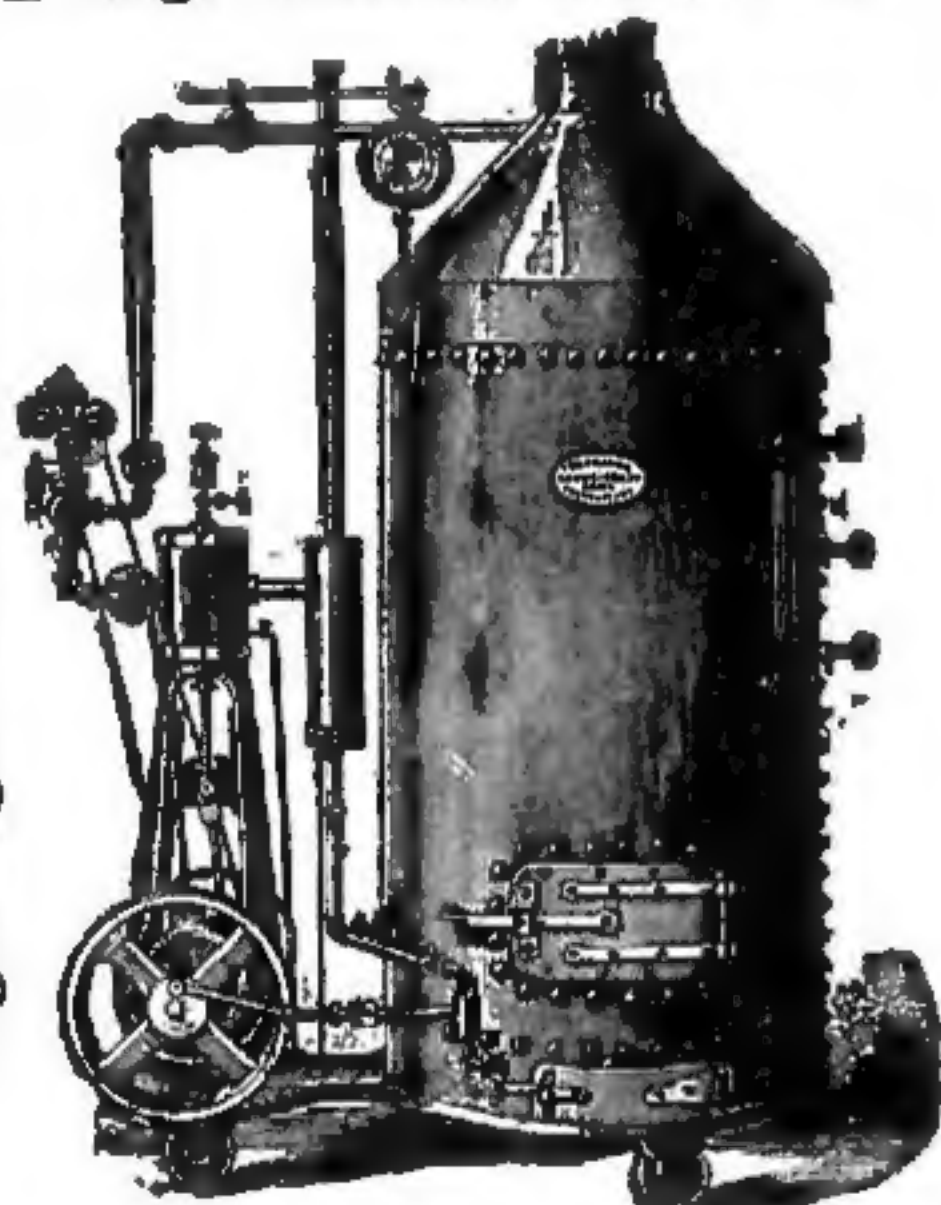
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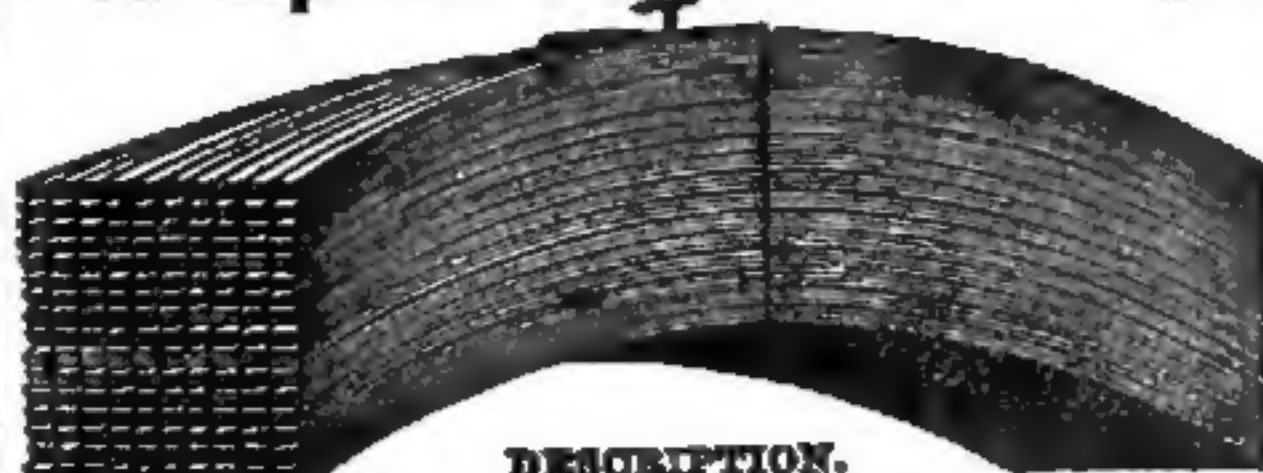
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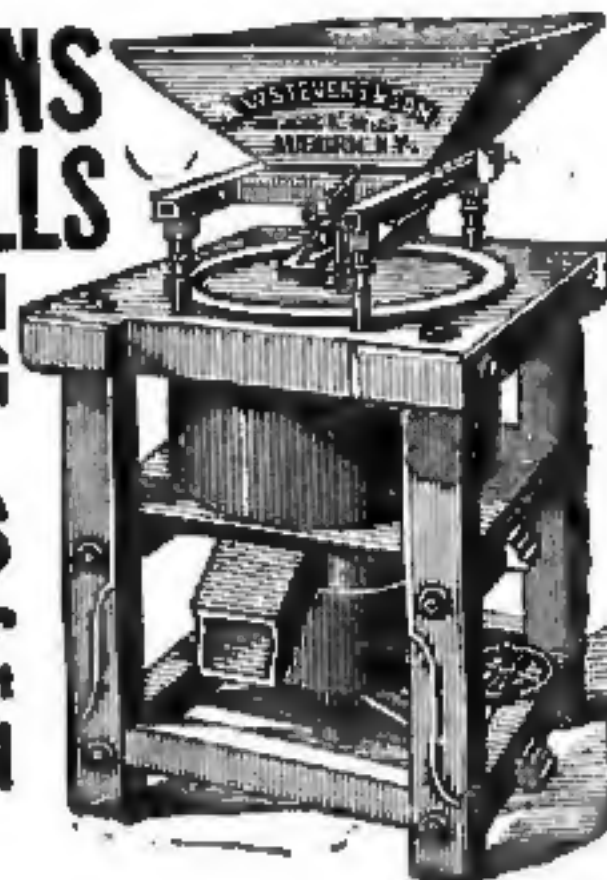
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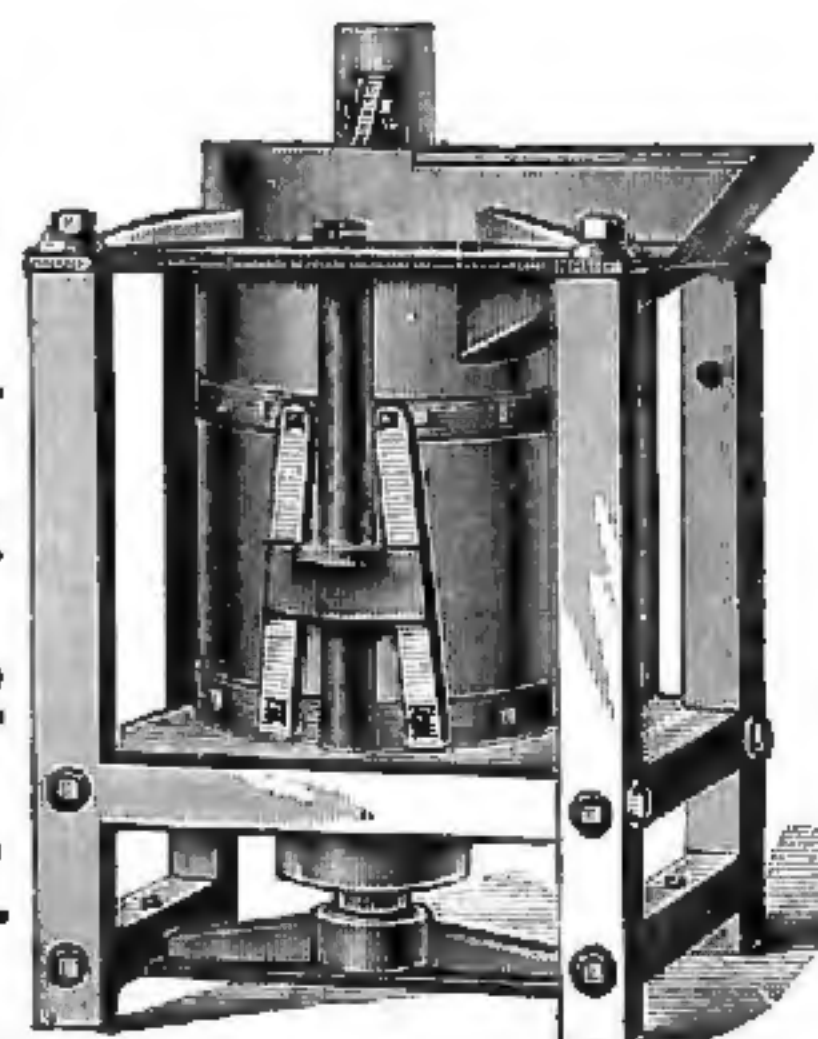
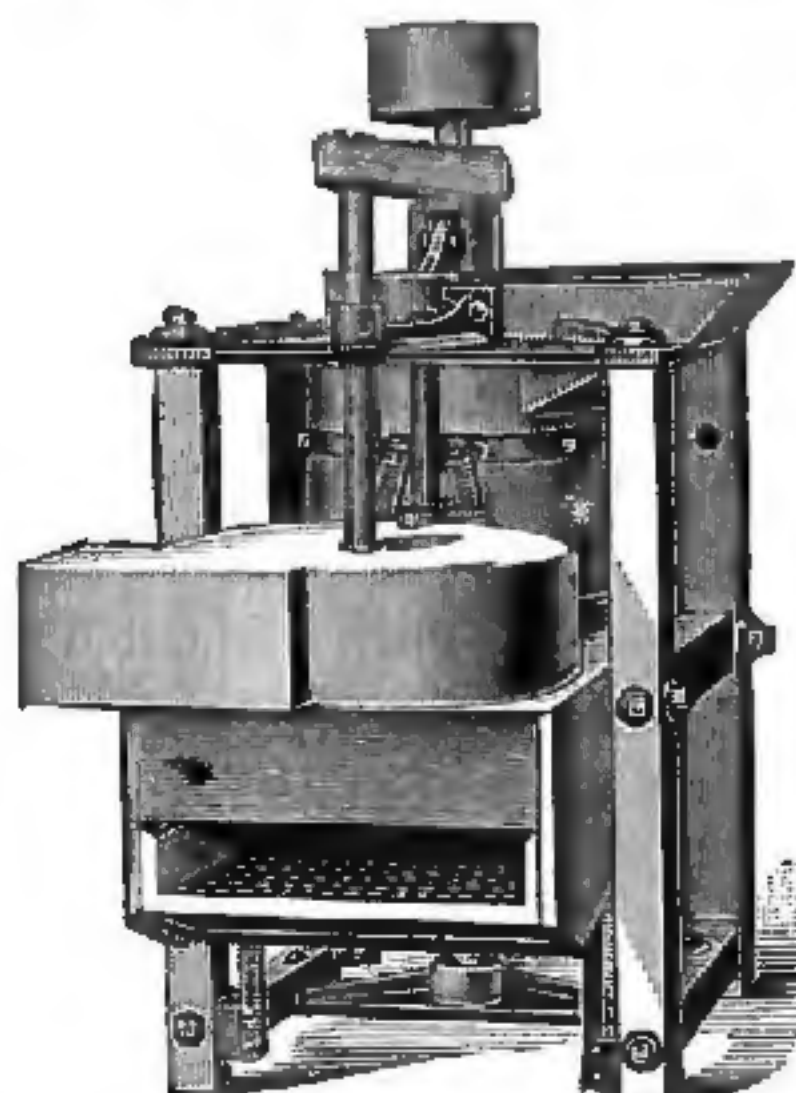
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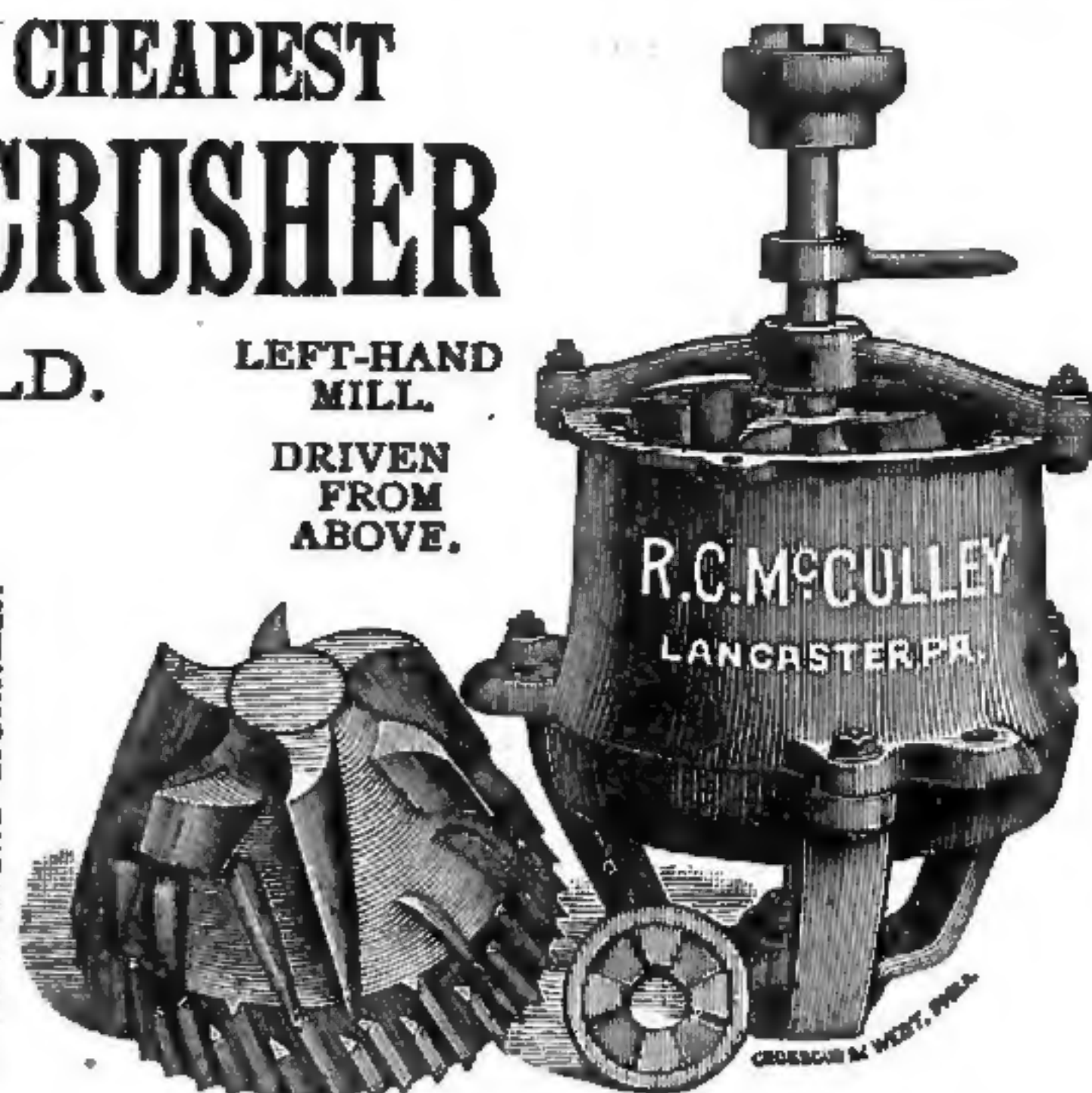
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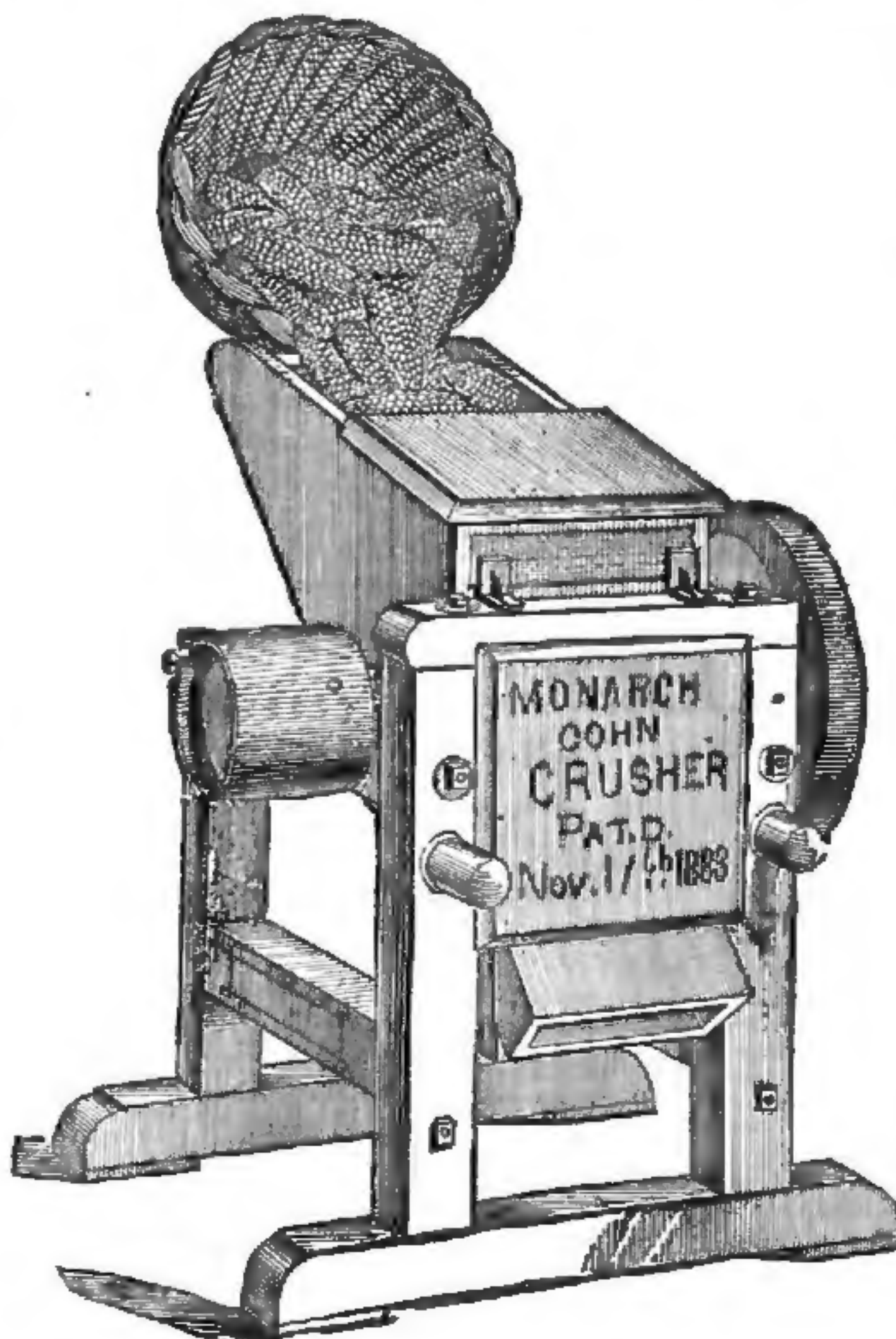


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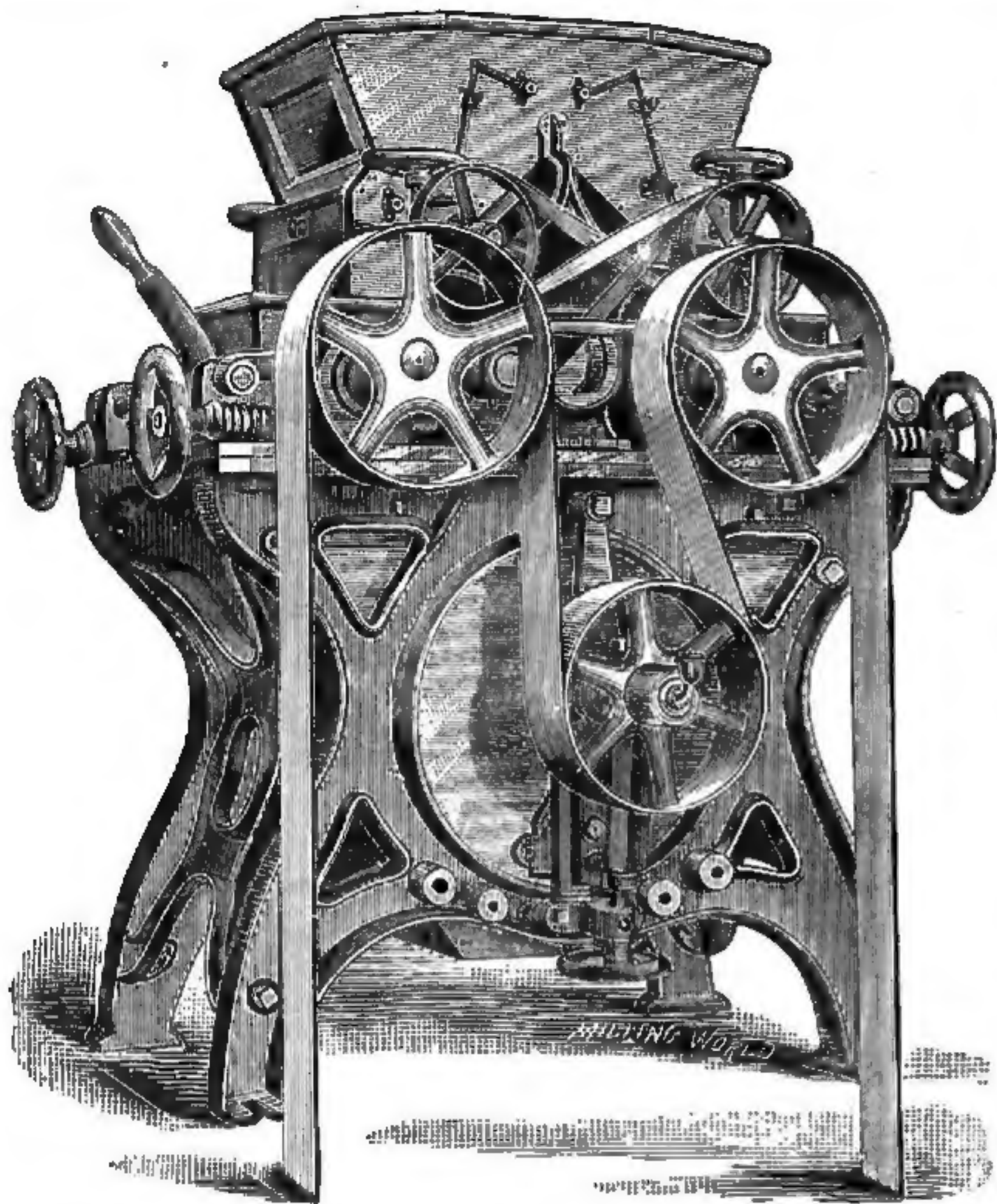
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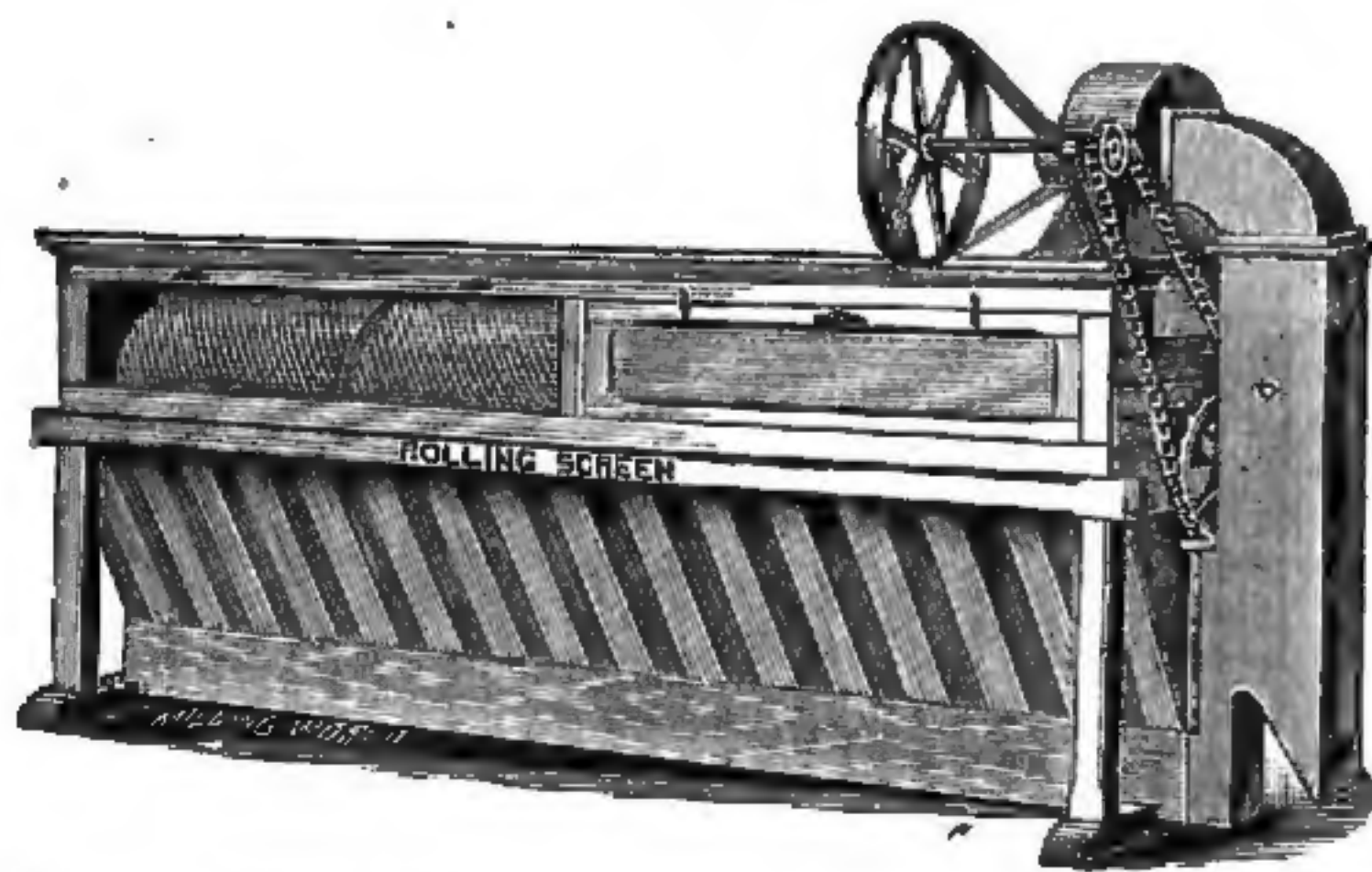
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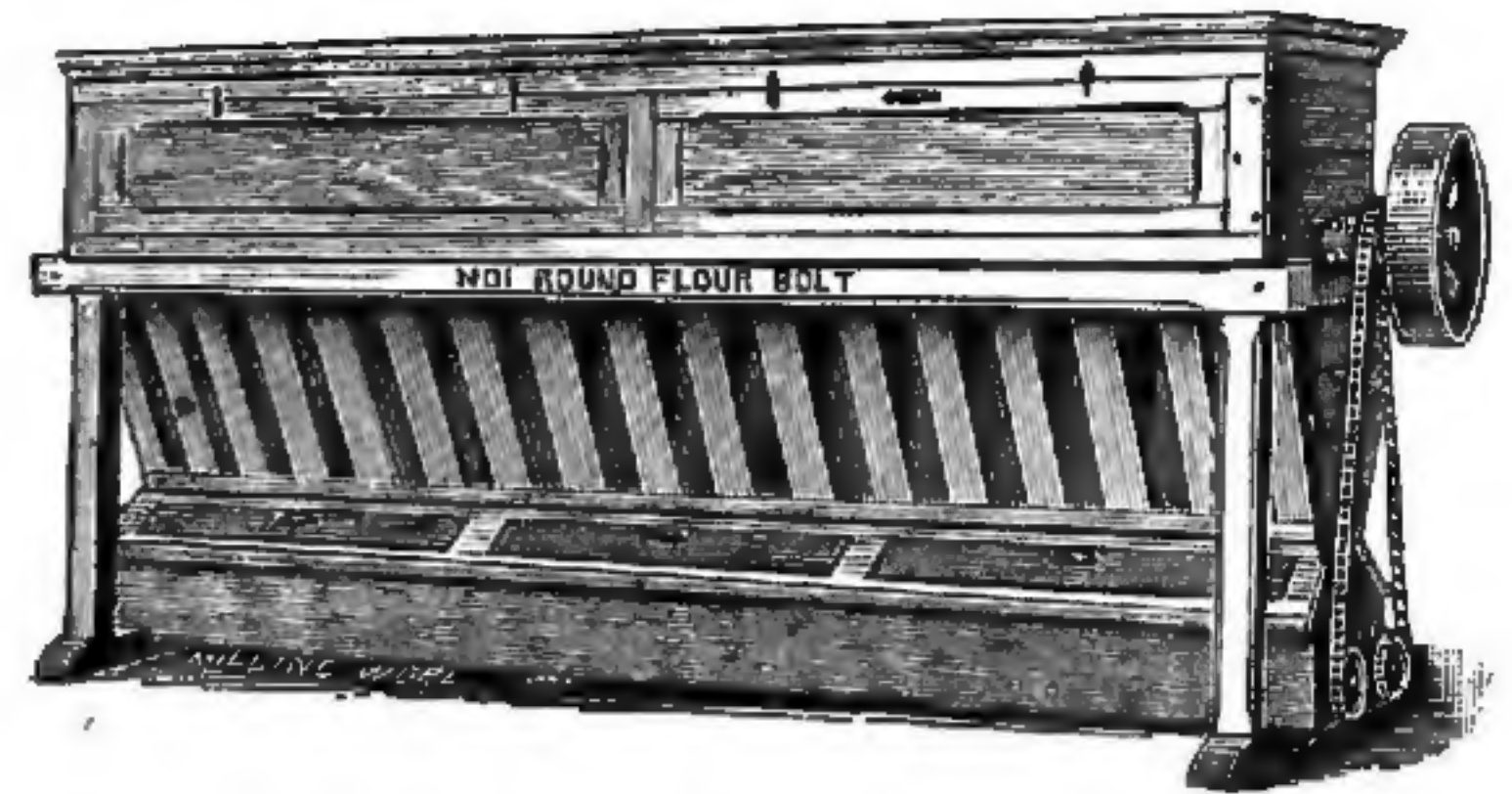
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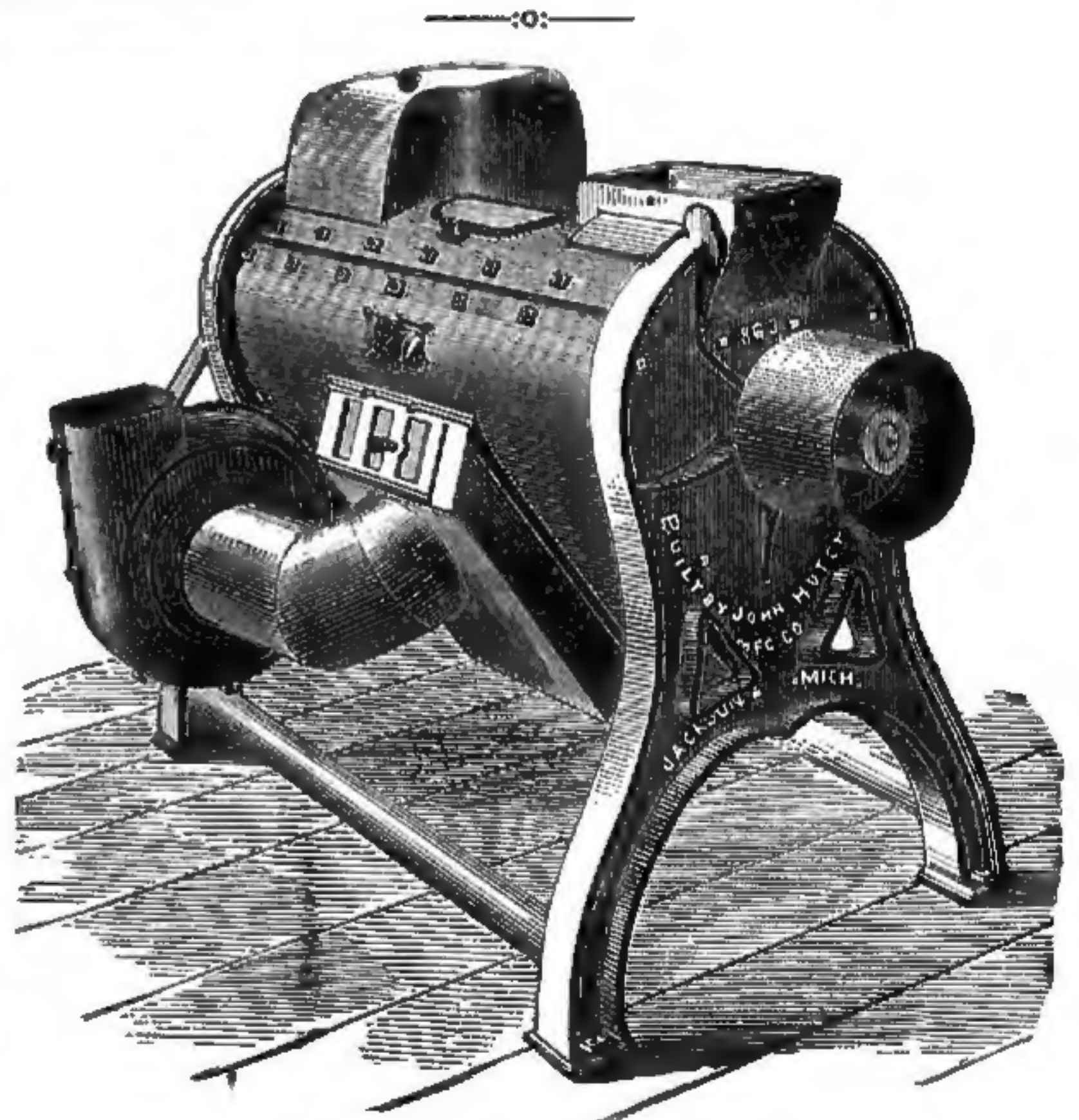


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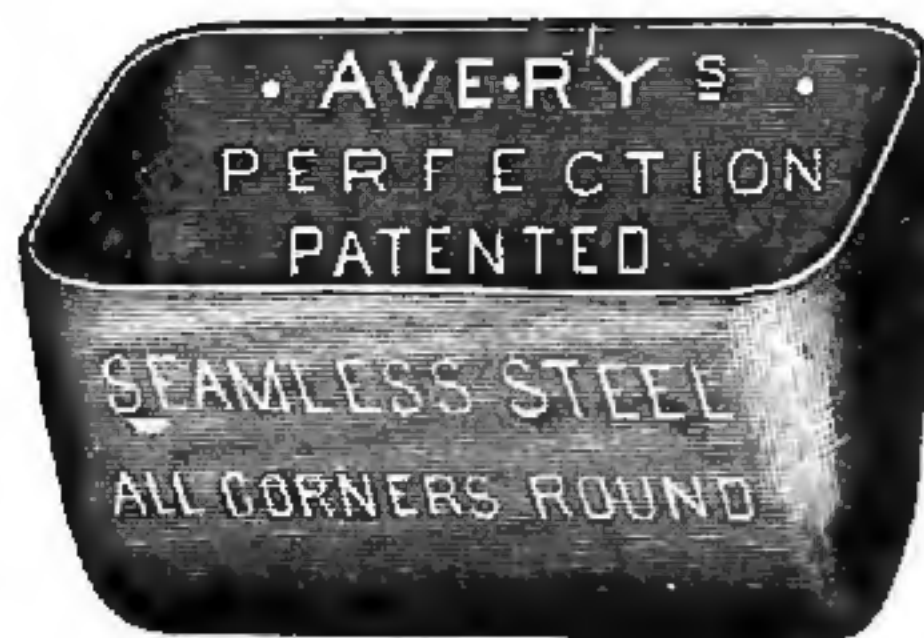
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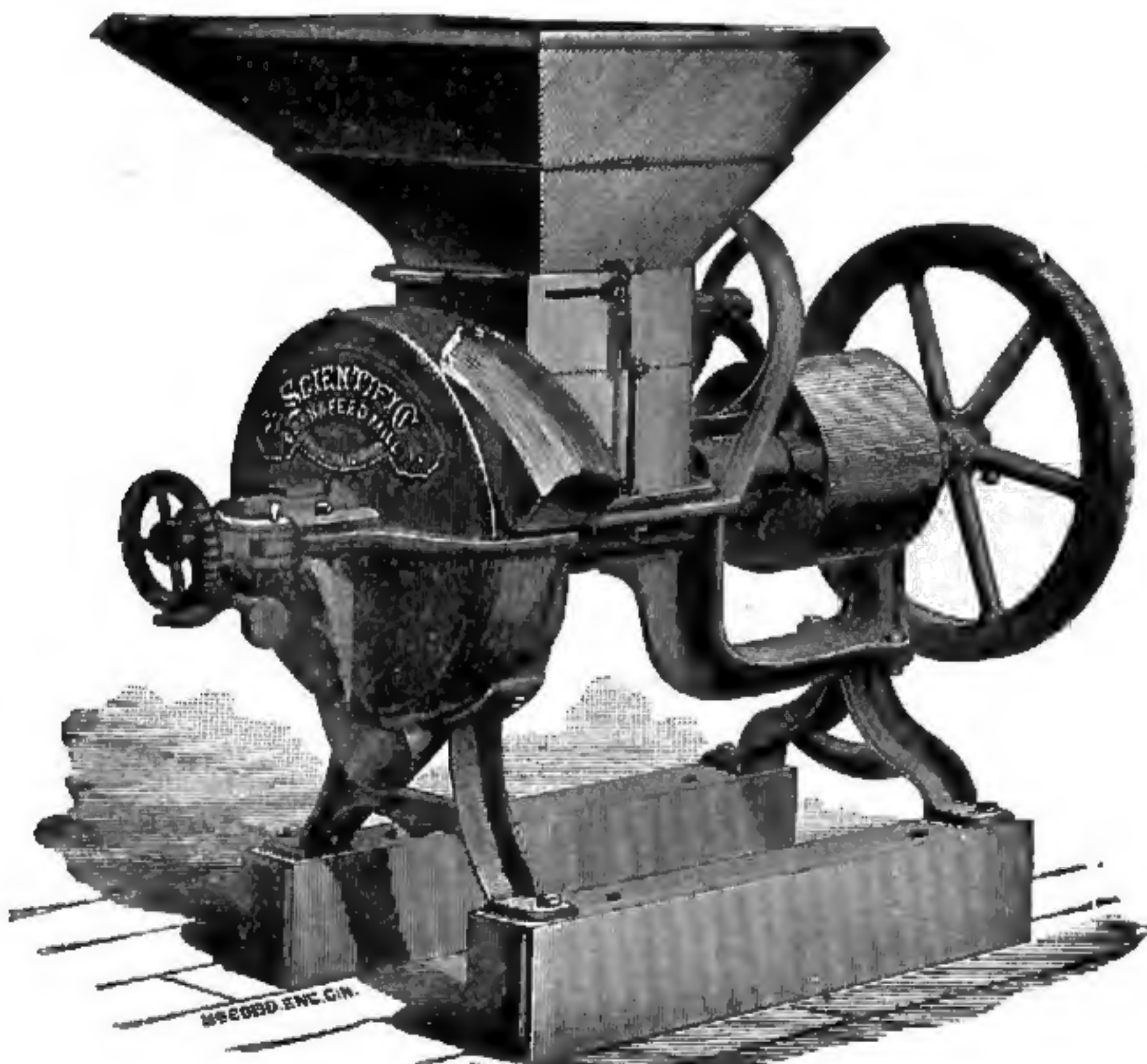
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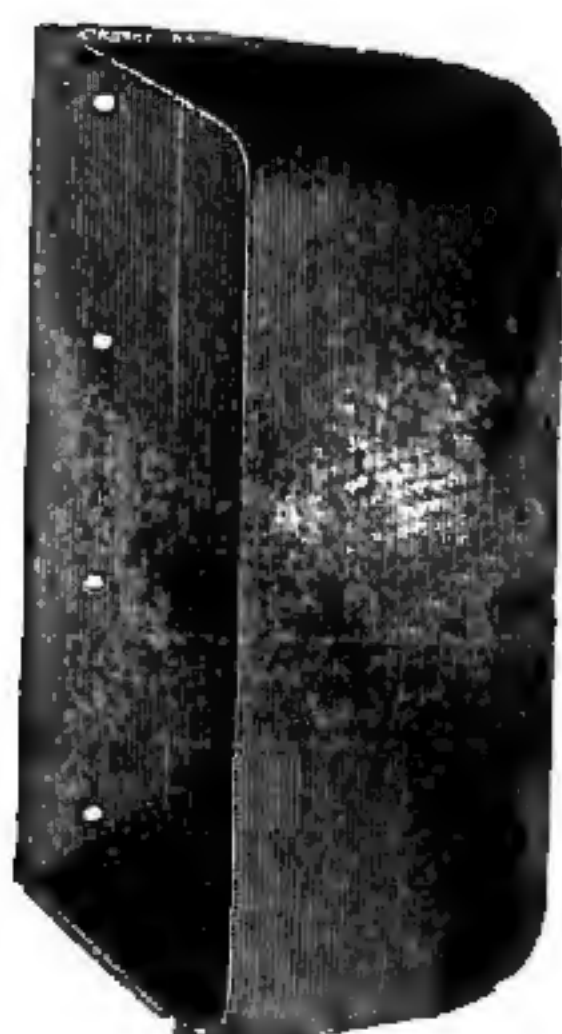
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